# COMPUTERWORLD

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Information center managers say that with their departments no longer trendy, they must justify their groups' existence on a cost-benefit basis. Page 8.

NAS rolls out its line of midrange processors aimed at the high end of the 4381 series and the low end of the 3090 series. Page 6.

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Prime ups ante in its chal-lenge to DEC's Microvax II. Page 12.

The executive credited with Hogan Systems' startling recovery abruptly resigns. Page 73.

## OS/2 kit a hit with MIS pros

BY DOUGLAS BARNEY

More than half of the 2,000-plus MS OS/2 Developers Toolkits shipped so far by Microsoft Corp. have been snapped up by corporate developers, many of whom say they plan to develop a new generation of personal computer applications with ties to

minicomputers and mainframes. In interviews with Computer rld, corporate devek MS OS/2 will allow applications on a mainframe and minicomout-

They are talking about the same thing we have had on main-frames for 20 years," said Chartie McLoughlin, manager of soft-ware support for auditing at Touche Ross & Co. in New

York. tem is set to be available early next year. According to Micro soft Chairman Bill Gates, corpo rations have expressed much more interest in developing for MS OS/2 than they ever did for

his firm's MS-DOS.

just interesting but crucial. "We are running out of gas in 6408 because of networks," said Ali sh, senior com systems officer in charge of future strategy directions for the International Monetary Fund in hington, D.C. "Our commu-tions cards require 80K to 150K [bytes] and prevent some of our applications from running.

That has put our networking in jeopardy." Semsarzadeh is looking forward to increased internal devel opment under MS OS/2, in par-ticular taking advantage of its large memory and multitasking

## IBM hastens 9370 deliveries

BY ROSEMARY HAMILTON and STANLEY GIRSON

In a major push for its new line of 9370 processors, IBM is accel-erating some delivery schedules by up to six months and detailing future enhancements that wi extend the 9370s into the main ocements that will At an analysts' briefing in Dal-

last week in which IBM styp cally discussed a range of com petitive benchma company said its 9370 Models 20 and 60 will begin general availability shipments today, ac-cording to John McCarthy, an Forrester Re rch, Inc. in Cambridge, Mass When contacted by Compu-terworld, IBM would neither

confirm nor deny the shipping ly said that general availabilit would begin in July

Six months early In addition, IBM has informed several customers that they can take delivery of the new line of 9370 processors six months ear-ber than they were originally told by the company. Gerald Giuliani, manager of MIS at Komline-Sanderson Engineering Corp., said he has a 9370 on order for the spring of 1988 but that IBM "wanted to

Another user who was first told to expect the machine in mid-1988 was recently advised that he can take delivery in De-

A software developer report Continued on page 93

Pouring out the iron IBM set to establish installed base of all 9370 models well before the end of the year



## ANSI Fortran revamp rankles giants

BY CHARLES BABCOCK

For one user, MS OS/2 is not A revision of Fortran that recently stirred up the opposition of a powerful set of Fortran com piler developers and users is be ing advanced by a technical com tee of the American Nationa Standards Institute. IBM, Digital Eq.

Corp., Unitys Corp. and Boeing Computer Services Co. repreves were among the nine X3/3 Committee members vot-ing in Philadelphia recently against what is likely to be For-tran 87 or Fortran 88, currently

designated Fortran 8X. Several of the features added to Fortran 8X make it too unwieldy, opponents say, while other needed features were left out. If these complaints strike a responsive chord in the user community during the public review process, negative com-ments on the ANSI standard to the Soviet Union could force it back to the X313

Committee for further modifica-IBM. DEC and Unitys all produce Fortran compilers for their

processors, while Boeing Com-outer Services provides Fortran siness and engineering applications to many customers, including its Seattle parent, Boeing Co. "Boeing as a whole makes saive use of Fortran. We have

member Ivor R. Philips, the Boeing Computer Services official who voted against the new standard. He said the company was still debating how to explain

We're in for a certain

## U.S. firms lobby for Toshiba

Vendors urge Congress to withhold sanctions

BY MITCH BETTS

a deep etrope interest in the new

WASHINGTON, D.C. - Com puter industry lobbyists last week urged Congress to shaeld the industry from any import ban or other trade sanctions imposed against Japan's Toshiba Corp., which is under fire for a subsiduary's sale of military technology

Representatives of the Com puter and Business-Equipment Manufacturers Association, the outer & Communicati

Computer, Inc. said U.S. com puter manufacturers depend on Toshibo-made semiconductors and other components and that those companies are worned about foreign retaliation in re sponse to U.S. sanctions.

The comments were made at a hearing held by the House Ways and Means Committee, which is considering legislation similar to the two-year import ban passed by the Senate June 30 [CW, July 6]. A week later, the Department of Commerce suspended Toshiba's blanket is-

Continued on page 94

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Closing the gap. NAS upgrades the chip technology in its inter-mediate AS/VL CPUs, countering IBM's move to plug the price/performance gap between its mid-range and large-scale processor lines with a third generation of 4381 machines. Page 6.

Opening communications lines. Micom brings voice, data integration to mid-range users with a multiplexer that permits highquality voice to be sent over 56K bit/sec, dedicated lines. Page 9.

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## Service rivals cut prices

TRW, Amdahl reductions counter IBM's CSA

BY STANI BY CIBSON and ALAN ALPER

Joining the growing number of ance providers that are cutting their prices in response to IBM's Corporate Service Amendment (CSA), TRW, Inc.'a Customer Service Division and shi Corp. will soon lower

Computerworld last week was informed that in mid-Auoust, TRW's Customer Serv Division, which maintains IBM's

and other manufacturers' gear, will decrease its maintenance charges by as much as 20% on called Service Plus. TRW, which specializes in

servicing networks and small previously prices that were 20% to 25% ower than IBM's regular prices according to Donald Goodspeed president of Computer Mainte nance Consultant, Ltd. in White Plaros N Y

Effective Aug. 15, TRW will reportedly offer 24-hour, seven day-a-week service at no extra a move that mi IBM's CSA. In addition, TRW said it will guarantee its m nance charges for two years and unlike IBM, will not penalize cus-In March, IBM revised its

CSA to offer 24-hour, sevenday-a-week service to customers under the plan at no extra charge. First introduced last fall. CSA discounts on network are vice can be as much as 33% lower than regular IBM mainte

nance prices. wever, the revised CSA ses have some sticking points. Customers must take a test wing that they are in contr of day-to-day operations and shooting in order to fy for the program. And while prices are guaranteed to remain within limits for fixed periods of time, customers can be asses additional charges for withdrawng from the program

Conclorge service Under Service Plus, TRW will rantee response times, the many said. The division said it is also providing customers with a "concierge" who is assigned to coordinate services nd troubleshoot problems when

"We're looking to give cus with no strings attached," said Paul Spyder, TRW Customer Service Division's recently appointed vice-president and gen-eral manager. "We don't require customers to do things the way IBM does."

For several weeks, Amdah has been notifying its customers that it will lower maintenan charges by between 11% and 23%, a company spokesman ac-knowledged. The spokesman declined, however, to offer a list of the different discounts offered

on various pieces of equipment. However, one customer said be was notified that mainten charges are being reduced on Amdahl 580 and 5890 proces-

by up to 23% In addition, be said be war told that Amdahl will reduce the rates for 24-hour, seven-di week maintenance for its 6380 and electronic direct access storage products by approximately

Amdahl'a changes are effec-tive Aug. 1 and will be automati-cally reflected in customer bills, the company said. Customers with multiple systems are still eligible to receive additional discounts under the Amdahl Multiple System Maintenance Discount Plan, according to the

world, and our pricing has to be competitive vis-a-vis competi-" such as IBM's CSA, the Amdahl spokesman said.

impact seen in prices
The impact [of the CSA] is high ly competitive pricing and exclu-sion of others," said Bob Djurdje stresident Research, Inc. in Phoenix. Diardievic said mainte rates of IBM plug-compatible vendors such an Amdahl have always been higher than IBM's

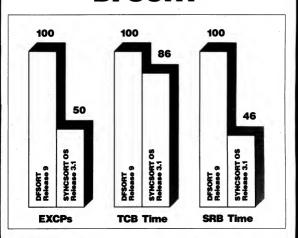
An IBM 3090 Model 600E, for example, carries a monthly maintenance charge from IBM of approximately \$14,000, but a comparable Amdahl processor costs \$19,700 per month for Amdahl to service, Dardievic

A apokesman for AT&T, a large Amdahl customer, said his company has been advised by Amdahl of the change. Amdahl does not maintain all of AT&T's Amdahl equipment, however, and the spokesman said it is too early to tell whether Amdahl will be given a larger slice of the

enance pie Both Sorbus, Inc. and Control Data Corp.'s Engineering Servicies Division have begun offering plans to compete with the terr nd conditions of CSA and offer estantial discounts [CW, June

In addition, Sorbus recently quired Pacific Computer Corp., a Milpitas, Calif., computer ny that specialises in ma nance of Amdahl equipm Also, Intelogic Trace, Inc. re-cently announced a discount program (see story page 51).

# SYNCSORT OS vs. DFSORT



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## Profits still down at IBM

Income falls almost 10% despite high demand for PS/2, early shipments

#### BY CLINTON WILDER

ARMONK, N.Y. - Still climbing slowly out of a two-year business trough that has outlaste the industry slump, IBM last week reported its fifth straight quarter of earnings below yearearlier levels.

Although a last-minute wave of financial analysts' enthusias raised market expectations that IBM's results failed to meet. most analysts said they saw few fundamental summers in the 9.8% drop in net income

The quarterly results were ething of a nonewest." said Stephen Smith, a computer hardware analyst at Paine ber, Inc. "Orders were a bit bet ter than in the first quarter, but a lot of that came at the low end of the product line. It was, as expected, a transit Profits (ell to \$1.18 billion, or

\$1.95 per share, from \$1.3 bil fion, or \$2.12 per share, in the second quarter of 1986. IBM eked out a revenue gain of 4.3% from \$12.27 billion to \$12.8 bil

In a prepared statement, IBM Chairman John F. Akers noted that IBM began early shipments of 3090E mainframes and 9370 and he said that Personal Sys tem/2 demand was strong. But Drexel Burnham Lambert, Inc. mainframe analyst Peter Labe said those products have not yet had much financial impact.

Those will all be second-half Labe said. "In fact. for IBM to pull out 4% revenue growth with nothing new to sell is really not had "

d restore e On the strength of those new products and a reduced cost structure, however, IBM is still

expected to restore earnings

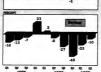
BY DOUGLAS BARNEY

CUPERTINO, Calif. - In an effort to leverage the success of its Q&A, an integrated file manager and word processor, Symanter Corp. last week announced Q&A Write, a word processing pack-

age priced at \$199. Q&A Write is aimed at middle sanagers who are interested in creating documents but do not need a complex and expensive word processing package, ac-cording to Rod Turner, Symantec executive vice-president Middle managers don't want to become experts in using their

owth as the third and fourth parters and into 1968. The introducts for recovery are there," Labe said, "For the next four quarters, the debate is not whether profits will

Not out of the woods yet IBM's percentage gain and decline in a comparison to year-earlier quarters



grow, but by how much." But regardless of a lower cost competitive pricing across the hardware product line will continue pressure on profit marging and probably prevent the mar-

as from ever reaching their levels of 1984, IBM's last strong growth year In the mid-range, for ex

e, IBM has had to price the 9370 aggressively in an attempt to win market share away from

The product is scheduled to

According to Turner, Q&A

Write will directly compete against Professional Write, a

popular package from Software

Publishing Corp. Q&A Write is

pete with high-end products

such as Ashton-Tate's Multi-

Corp.'s Wordperfect and Micro-soft Corp.'s Word.

version of the word process

module within Q&A and include

printers font control and an-

Q&A Write is an enhanced

mate Advantage II, Words

not expected, however, to com

shin this month

In the third quarter, high-end 3090E sales volumes should be gin to pick up. Paine Webber's ane survey of IBM mainframe buying intentions for the year found that 24% of surveyed corporate users intend to buy this year, compared with the 16% sho responded positively in

In addition, IBM's unprecedented work force and expense reduction plan of the past 18 months is expected to begin low-

Symantec unveils Q&A writing tool Development Corp.'s 1-2-3 or

other popular applications from the Q&A menu. The package reportedly can import complete 1-For corporate users needing to share documents with host systems, Symantec said it will of fer, for \$29, an IBM Docu Content Architecture utility that

CORRECTIONS

Analysis Systems, Inc.'s Ansys can be used by cussupport of most popular laser tomers as a benchmark (CW, June 8], but the product prim hanced data import and export capabilities. Users can run Lotus ly functions as a finite-element Merge 386 was incorrectly referred to as an operating system in which Unix runs as a task under Microsoft Corp.'s MS-DOS (CW, July 61, MS-DOS runs as a Unix

ering the firm's break-even point. The company said 13,000 employees, or 1,000 more than previously appounded took advantage of the early retirement ncentive program that ended

Digital Equipment Corp.
'That's the price you have to ated that IBM will pay to stem the competition save an average of \$60,000 an-nually for each departing emsaid Bob Djurdjevic, president of Annex Research, Inc. in Phoeplovee and that it will slash overall expenses by \$1 billion. IBM's reveoue from m ce services grew only 5.6%

in the second quarter to \$1.93 billion. The growth rate is expected to erode further in the third quarter, the first full quarter of deep maintenance price cuts under IBM's Corporate Ser-vice Amendment, which took ef-

"That's an area wan aggres-and others have been aggres-That's an area where IBM sive, and it's showing," Paine Webber's Smith said. But most watchers said they expect growth to be restored in the long run as IBM expands its installed base of hardware to be serviced.

Rise in software revenue IBM's most encouraging finan cial news was in software, in which revenue - primarily from mainframe operating system bottomses — grew 23% in the secand quarter to \$1.53 billion IBM's software revenue reped 12% of total sales, up

10% one year earlier. Djurdjevic predicted that IBM's gross margins on operating system licenses, already higher than 70%, could rise to more than 80% by next year

"It's all blue sky, all upside on tware," Djurdjevic said. TBM's MVS and VM are the one area where they still can cal all the shots. If that were ever to change, IBM's entire strategy would come tumbling down like a house of cards

IBM's second-quarter results benefited significantly from the weak U.S. dollar. The company said foreign currency diff tials raised its profits by \$115 million and its revenue by \$840 provides document import and

export capabilities for 15 popular word processing packages.

The product, however, lacks

any of the features available on

mic outlining and footnotes.

ch was recently ac-

packages, such as built-in dy-

Outlining capabilities may even-tually be offered by using tech-nology from Living Videotext.

quired by Symantec.

higher priced word proces

COMPLITERWORLD

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## ACCESS THE CULLINET FINANCIAL SYSTEM. RACAL-VADIC DID



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in Information Technology Integra For The 80s, 90s And Beyond

## NAS intros counter IBM in processor fray

BY JEFFRY BEELER

MOUNTAIN VIEW, Calif. - As ected. National Advanced Systems Corp. (NAS) last week countered IBM's recent move to en mid-range and large-

scale processor lines. Announcement of the four AS/VL intermediate systems comes hard on the heels of the ut of IBM's third generation

4381 Models 23 and 24 and introduction of the entry-level 3090 Model 120E. In extending the 4381 upward and 3090 downward, IBM bridged the in-timidating price gulf that had long divided its medium- and ge-scale CPU lines, according to Rick Martin, a research and lyst with New York brokerage house Sanford C. Bernstein &

For more than 20 years. "very few users could ever af-ford to jump the gap," which typically ranged from \$1 million to \$2 million, Martin said. When they exhausted the capacity of their existing machines, "It was a lot less expensive simply to buy a second mid-size system instead

igger machine." M's intent in filling the price gap between its processor families is to induce 4300 series rs who might otherwise have ed at migrating to the 2000

to take the plunge, he said. But in positioning a range of ns where none previ ted, the industry giant has also intensified the competitive pressure on NAS, which has ered the challenge by up-ng the semiconductor technology in its intermediate CPUs.

2,000- and 5,000-gate emitter-coupled logic chips, which operate at 200 to 250 picosec. In the I/O processor, NAS uses 24,000- and 40,000-gate CMOS components while incor-porating 4K- and 64K-bit bipolar CMOS technology in the associ-ated cache buffers and dynamic

of the three uniprocessors, the AS/VL 60, provides 3.5 to 4.2 times more throughput than the firm's existing AS/6660 CPU and outperforms the AS/VL 40 and AS/VL 50 by 40% to 55% and 25% to 35%, and 25% to 35%, respectively. The dyadic AS/VL 80 offers

terparts, Profio said. The largest

Dueling mainframes New NAS mainframes positioned for price and performance challenges to IBM systems

	National Advanced Systems				IBM		
=3	AS/VL 40	AS/VL 50	AS/TLES	AS/VL so	4361 Model 34	3080 Medel 120E	5090 Model 1808
MIPS*	5	7.5	10	17	7.8	7.5	15.6
Memory (in bytes)	32M to 128M	32M to 128M	32M to 128M -	3274 to 256M	16M to 64M	33M	32M to 64M
Price	\$638,000	\$891,000	\$1.314	\$2.1M	\$890,000	\$985,000	\$2.6M

With the AS/VL, the company has adopted a "layered technoiogy" approach in which each systems module uses a different kind of circuitry, according to Dave Profio, NAS's manager of

The design concept resembles the one underlying the plug-compatible vendor's top-of-theine AS/XL mainframes. For ex de, with the three AS/VLs processor models and lone adic machine, NAS uses

working storage. The AS/VL also reportedly marks the first use in a mid-range system of 1M-bit CMOS memory chips. Together, the various catego-es of circuitry "allow NAS to

price its systems even more agressively than the 3090 Model 120," said First Boston Corp. Vice-President Steve Miluno-vich. "Technology will definitely

give the AS/VL a price/perfor-mance boost over IBM."

The AS/VL series offers a 15% to 20% advantage in price/ performance over its IBM com-

70% to 90% m power than the AS/VL 60, ac-cording to NAS. By implementing much of the

processor family in dense CMOS, NAS minimized the machines' parts counts and reduced their footprints to 16.1 sq ft,

The CMOS chips' heat diss pation also reportedly allows the AS/VL to provide increased pro-cessing power while using the sir-cooling scheme utilized in earlier NAS systems. By contrast, IBM uses air

cooling in the 4300 and relies or water cooling in the larger 3090 mily, which requires costly imbing additions when a user

Jpgrade hesitation Secause such facilities change

are costly, many 4381 custom-ers will heatate to upgrade to the 3090 even with the recent closing of IBM's price gap, according to 4381 user Phil Grammatica, DP director for the City of Ansheim.

Calif In the wake of its AS/VL introduction, NAS's Japa nese hardware supplier, Hi tachi Ltd., ceased produc-tion of the NAS AS/6600

family. In addition, the firm said it will continue to male small quantities of the AS/8000 for a limited time. 5/8000 for a limited time. All three of the field-up gradable AS/VL uniproces

granute 10,9 V2 insproces
are support a minimum of
eight channels and 8M bytes
of memory and expand to 32M
bytes and 128 channels. Delivery is set to begin this quarter. The AS/VL 80 also bol

eight to 32 channels but has twice the main memory capacity of the other three models. Shipments of the dyadic corr

lex will reportedly start during Buse configuration prices are \$638,000 for the AS/VL 40, \$891,000 for the AS/VL 50,

\$1.3 mi 1.3 million for the AS/VL 60 od \$2.1 million for the AS/VL

#### OS/2 kit FROM PAGE 1

IMF economists. "Our related coment is related to booking PCs into larger systems," The IMF currently uses Mi-

ferent data bases, one on a Hewlett-Packard Co. minicomputer and the other on a Digital Equipment Corp. VAX. The IMF's sister organization, the World Bank, also uses a Windows interface to access a host data base. OS/2 with the Presentation mager interface will allow the IMF to have communications running in the background, remove the memory crunch and allow users to be constantly connected to more than one host r, without interfering with PC applications, Semanara deh said. All these applications can be addressed through the ne interface, be add

Touche Ross's McLoughlin said all in-house applications written in his department will ually be con erted to OS/2 But some may be difficult to convert. Most of McLoughlin's apolications are protted in Basic in the QS/2 tool kit.

A key part of the migration to OS/2 is the compatibility box, which allows many existing MS-DOS applications to run but without taking advantage of additional memory. "Our stuff will run in the compatibility box," McLoughlin said. With the comcrosoft Windows to provide a patibility box, users can install consistent interface for two dif-OS/2 and retain the invi sting applicat

Minis look like microa A user at Westinghouse Electric Corp. has similar plans. "They

be able to be logged onto an IBM 3090 and a Data General Corp. mini and do local work. said Robert D. Wood Jr., associate systems analyst in the mar-keting services division at Wes-tinghouse. In addition, Wood says be expects his department to put minicomputer-style appliions on micros running OS/2. It is getting tough to distinguish between the minis and the micros," Wood noted.

Charles Weir, a systems ana-lyst at Reuters, Ltd. in the UK. said be is also impressed with OS/2's capabilities. "OS/2 is the way things are going. It gives us extra memory and faster task Reuters developed a currency trading system that runs un-der Windows and replaces multi-ple terminals that traders formerly used. The company will ually move that system to the Presentation Manager, according to Weir. Reuters has decided against Unix for its trading system. "The Unix graphics in-terface is suspect," Weir said.

Analysts contacted just week disagreed on corporate interest in OS/2 development. "The new BM Personal System/2 design is a real computer design with a real operating system in the eyes of MIS. Companies are realizing they have a huge investment in PCs, and there is a lot of presture from upper management to better utilize that investment, including in DP-type applications," said John McCarthy, research manager for "Forrester's Professional Automation Re-

port" in Cambridge, Mass. "We are seeing the systemization of But Marty Grobo, vice-ore dent of The Sierra Group in Aris. Tempe, Arix., disagreed. There is a lot of inertia in the old MS-DOS. A lot of users are

not convinced of what OS/2 will Gruhn said. "Buying a \$3,000 tool kit is not a maj egic investment for these

#### Turbo gets toolboxes SCOTTS VALLEY, Calif. - trol-character driven, and Mi

Borland International an-nounced plans last week to introcrostar, which is similar to First-Ed but has pull-down menus. duce three Turbo Basic tooli Both editors are random-access es for data base, editor and memory based. telecommunications develop

splay and entry.

cord numbers, permitting data bases of more than two billion re-cords, Borland claimed.

The Database Toolbox also includes a Turbo Basic version of the Quicksort program and supports virtual memory manage-

ment for an expanded sorting

three types of files: Borland'a Reflex, ASCII and Ashton-Tate's Dhose II and III Plus.

The Turbo Basic Editor Toolbox comes with First-Ed, a multiwin-

Data can be imp

Supports windows
The Editor Toolbox supports
multiple windows, sustitusking
and DOS functions like copy/de-The developers' tools, which are sisted to be available in the third quarter, include source code that can be incorporated lete file or change directory, into users' applications, accordorland said. ing to the company. The Turbo Basic Database

The Turbo Basic Teleco Toolbox is said to provide the routines required to build a complete communications program.

It includes an asynchronous Toolbox includes three sets of routines for data base programming: access, sort and acreen communications tutorial and routines for controlling ports It uses long integers for re

d screen handling. The package features two exple programs: Smallcom, a simple program with basic mo-

m control, and Turbo Telecom, a complex program with command line and acript pro-cessing, Digital Equipment Corp. VT100 terminal emulation, Xmodem file transfer and a phone book data base. The toolboxes are availfor IBM Personal Computers

and compatibles.

Borland said each toolbox will

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ger. A number of proje

behind schedule.

ese problems, be added.

as fourth-progration law

der-processing system that had been languishing for four years,

ent got res

oess, so our budget has been there," Artes said. Recently, a productivity consulting group was hired to evaluate McCor-

mick's information systems re-ourements. "They said we were

redundant. But management did not agree, "Artes added.

Ron Carroll, manager of the DP information center, said the

firm's management recently saw the immediate results of an in-

ventory-reporting system that

was put together by Carroll and members of the information cen-

system is being installed nation-

wide, and, as a result of this autotion, Carroll said, each city

The microcommuter-hone

tment at Storage Technology orp. took a similar approach

tre "he said

The system

## Information centers growing up

Survival depends on ability to better integrate center into corporation original - and very broad -

NEW ORLEANS - The information center fad is over. Now, any of these facilities are being anagers and consultants said Three years ago, lots of peo-

nion of bringing computing to the masses and to zero in on a specific, high-visibility project that is sure to catch monage-Of the 450 information ce ters recently surveyed by Crwth Computer Coursewares, 32%

ormation center chargeback un majority do not have



ATTOM PROVIDED BY CHARLE COM-

ple thought they better have an rted that a chief obstacle is on center because they
The competition has the ability to justify resources When this survey was conducted one, or, The guy I play golf with has one, " said Larry Des Jardines, manager of user services at United Student Aid Funds, "But now we're getting looked at.

Many consultants at the Inion Center Conference and Exposition, held here last week, suggested future survival depends on the information cer ter's ability to market itself to the corporation. Some informs tion center managers, however said the key is for their depart-

two years ago, this question was not included because it was not an issue, a Crwth spokeswoman said. But when she surveyed 100 information center ma this year to help establish the guestions for the 1987 questionnaire, "they made the sugges-tion that we include this issue."

A real hot is At McCormick & Co., 2 sp foods manufacturer in Ba more, the end-user services or-

rray processing features are a sizable addition to Fortran, she

amount of controversy now. I'm bracing myself," said X3J3 Committee Chairwoman Jeanne C

She called the propos changes in Fortran, which in clude the addition of array processing and derived data types, necessary modernizations of the Inguage.
The X3J3 Committee also

Revamn

proposes to do away with what it calls duplicative or obsolete features of the language over an unspecified time period. That ex tended time frame has stirred fittle opposition, said X3J3 Vice-Chairman Jerrold L. Wagener of o Corp.

IBM could not be reached for comment at press time, but Adams said the IBM representa tive's opposition was based in part on a desize to keep Fortran compact enquels to nun efficient ly on a personal computer. The

Boring Computer Services' represectative cast a negative vote because the company was look-ing for additional features in Fortran, such as bit data types and

pointers, Wagener said. Boeing Computer Services' Philips said his company was not ready to announce its stance in opposition to Fortran 8X, But each committee member voting against the proposed standard must out his reasons on the re-

cord, Adams said Unity's represe Rollson charged that the committee strayed into designing a new language rather than standardizing features common to

the best existing Fortran compil-ers. "We thought they added too much to the language," he said. The opposition, while influenthose who say we've got too

erage initial savings of \$60,000 for the first month "Those types of systems got us enough visibility for manage-

ment to say that we are a strategic part of the business," Carroll ne of corporate crisis, said Tom Artes, system application Carroll also agreed with the

marketing techniques and pla discussed by consultants a maintenance was a real bot is managers at many of the Info ation Center Conference's minars. In addition to the spe-The systems and project nagement group was formed cial projects strategy, Carroll to operate separately from MIS said that his department publishletters on their ach ments while also hosting lur-One such project was an or-

information center employees according to Artes. His group Unclear responsibilities Not all information centers have a few months, he said. From there, additional projects, such taken the approach of tackling key projects and, as a resu use among end users, have been

When Des Jardines was hired

by the United Student Aid Funds wo years ago, he said, he was tion center. Cons ently, he was strapped with the job of selecting hardware and software, installing it and bringing uters up to speed with the systems. Eventually, Des Jar-

nes brought on four analysts to ive a good sense of what we're sing," be said. "Often we belo someone else accomplish some-thing, and they get the primary recognition. What we do is more intangible — you can't put proctivity figures to it."

However, Des lardines sai cheons and giving awards to

that since 1985 his immediate boss has developed a clear understanding of his department. "We're not called on more than other departments to justify our budget, but the manager is now asking me more questions," he

Information center obstacles ry of 450 information centers to 1987 indicates end-user management resistance are on the sease



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much in the new standard and those who say we've got too lit-Wagener noted. As a result. the X313 Committee "is in a tricky situation. To satisfy one of the groups will make the other has already forwarded both nee

The cituation reminds so observers of the dilemma faced by another ANSI technical committee when it attempted to per the new Cobol RS standard ac-Powerful opposition emerged during the public re-view process, challenging modernizations that would have required the conversion of the huge library of existing Cobol ap-plications. Compacibility does not appear to be an issue in the

debate over Fortran 8X.

nhappy.

The X3J3 Committee's pro posed standard is undergoing a 30-day letter ballot cons ation by parent X3 Committee members, the positive outcome of which will allow the standard to be submitted for four mo

The opposition to Cobol 85 emerged during its public review An X3 advisory cor

stive comments and proposed ages to the parent group ANSI's Standards Planning and Com which checks procedural mat ters, took the step as a way of making certain that opponents get their point of view represented to all parties.

"The negative con ing to have an effect," said fagener, an advocate of the new standard. But, he said, a solid two-thirds majority of the X3J3 Committee held together in

cording to committee observers, include the following: Provide array operations or process sets of data simulta-neously. This feature is already offered by several vendors of

link the common elements of spite of the disagreements.
The proposed changes, acsubroutines or other objects Provide for the removal of ob-solete, or so called "depreciat-ed," features of the language at an unspecified future date. The deletions would occur with the

· Provide an abstract means of specifying the representation of ers, leaving it to the com-

piler to determine whether numbers should be stored as singleor double-precision figures. Commercially available compilers do not provide this feature. Provide derived data types, whereby a data type for employ ee oumbers, for example, could prevent an attempt to add employee identification numbers together, even if an application mistakenly called for such a re-sult. This feature is another that is not currently available on Fortran compilers.

Provide modular definitions, which allow a programmer to

## Micom melds voice, data on 56K bit/sec. lines

#### BY ELISABETH HORWITT

SIMI VALLEY, Calif. - A comb voice digitizer and digital multiplexer that Micom Systems, Inc. is expected to an nounce today reportedly provides voice and data integration over 56K bit/sec dedicated circuits as an alternative for sites that cannot cost-justify a 1.5M bit/

T1 line.
The Oneliner, by transmitting multiple data and voice transmissions over the same 56K bit/sec. dedicated digital line brings voice and data integration to midrange companies — Micom's target customers — that "often cannot afford T1 lines except as backbone networks," said com product manager Greg Iverson "If you are doing more than 11/2 hours of telephone calls between two sites, you save money by using a leased line, many companies have one lessed line linked to the private branch exchange

[PRX] and another for data Most interface equipment that proes voice and data integration supports 1.5M bit/sec. T1 rates, according to Iverson, and many corporate sites do not have the voice or data traffic to justify installation of such equipment

Oneliner incorporates Micom's new Ad-vanced Packetized Voice technology. which converts voice signals into digital packets, permitting "high-quality vos to be sent at rates of 9.6K or 14.4K bit/ sec., Micom said. As a result, the multiplexer can support as many as four voice charmels, or a combination of voice and high-speed data transmissions, over a sin-

## Ex-Intelsat head guilty of fraud

#### BY MITCH BETTS

WASHINGTON, D.C. - Richard R. Coino, the former head of the International Telecommunications Satellite Organization (Intelsat), last week pleaded guilty to participating in a \$4.8 million scheme to fraud the satellite consortium. The complex scheme involved efforts

by Colino and associates to obtain kickbacks from contracts for the financing and construction of Intelest's new heads ters building here, according to court doc-

Colino, who was fired by Intelsat in December 1986 following a financial audit, jail and a \$250,000 fine after pleading guilty to one count of interstate transpor tation of money obtained by fraud. Sen-tencing is scheduled for Sept. 11 in U.S. District Court here

Intelsat is a 114-nation cooperative that operates a global satellite system for telephone, video and data communica-tions services. Colino, 51, was known for trying to turn the consortium into an agve competitor to meet the challenge of rival carriers using fiber-optic ca-

Industry experts questioned the mar-ket for S6K bit/sec. voice and data transmission. "I don't think many compe would bother to install S6K bit/sec voice and data when it only takes six 56K bit/sec. channels to cost-justify installing a T1 link," said Richard Kuehn, presid of Cleveland consulting firm RAK Ass

'A 56K bit/sec. Dataphone Digital Service [DDS] line is damned expensive eed William Rahe, a vice-president of the enterprise networking strategies group at the Gartner Group, Inc. in Stammost of a DDS line but wanted to slip in some voice bandwidth," or for companies that provide long-distance satellite con-nections, Rahe noted, "GTE [Spacenet Corp.] just announced a 56K bit/sec. full plex VSAT [very small-aperture ter ally, he said, the product could be

nal] that only costs \$1,700 a month." Aded over satellite or transatiantic cable sed links between the U.S. and Europe Other products, or combinations of cts, can reportedly provide S6K bit. rugh Micom seeks to differentiate its own product in terms of voice quality. Republic Telcom Systems Corp. in Boulder, Colo., reportedly offers a multiplexer and roice digituer that supports six to eight voice channels or a combination of voice and data. In March, Timeplex, Inc. in

Woodcliff Lake, N.J., began reselling this system under the name Link Packetized General Data Comm Industries, Inc also reportedly has a voice digitizer that ends 16K bit/sec. voice char

Pricing for the Oneliner Wideband Synchronous Time Division Multiplexer starts at \$4,635. It can be equipped with an MT VM2 full-duplex voice digiturer module, priced at \$2,940, and an integral 56K bit/sec. data serva e unit per channel service unit, priced at \$1,250.

als must seem like your best bet to start

they're designed for reference, not training So they don't help you focus on what's real by important and practical. And other so

teaches you the essential and useful points

and does it from your perspective appli and does it from your perspective apply.

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So why wait?

#### ford, Conn. However, Oneliner would be Just published:

## IMS for the COBOL Programmer

#### Part 2: Data Communications and Message Format Service

This NEW book takes the pain out of learning how to handle IMS data communications (DC) processing. Although IMS DC is a complex subject, this book takes you through it step-by-step so it's manageable and area asset to indirectated. and even easy to understand (You use IMS DC on an MVS system or interactive applications that let terminal users access and update IMS data bases

users access and update IMC data bases. There's another function of IMS —IMS data base, or DB, processing—that lets you ac-cess IMS data bases in batch. IMS for the COBOL Programmer, Purt 1 covers IMS DB (called DL/I on DOS:VSE systems). hich you need to know about before you in tackle IMS DC.)

## IMS, Port 2 focuses on 2 main topics. First, it feaches you all about the COBOL programming considerations for DC programs. That includes:

 why you have to code m why you have to cour message, social-ing programs, or MPPs, the way you do IDC programs are typically called MPPs, because they handle messages sent from

and to user terminals? what the COBOL elements are for MPPs. how to send output to a terminal other

cation that lets you save data from one execution of an MPP to the next

 how to develop a batch massage processing (BMP) program that can do batch updates on IMS data bases while e data bases are being used by other programs

how to use Batch Terminal Simulator (BTS) to test DC applicanons using IMS resources, but without affecting the production IMS environment.

The second main topic of JMS, Part 2 is Message Formet Service (MFS) MFS acts as an interface between the format of messages as they appear at a terminal and the I/O formats in your programs. So you'll

that exectly the formats of terminal and program I/O control cursor position and field attributes

on a screen so you can make data entry easier for a terminal operator · handle PF key functions through MFS develop applications that use more than one screen formal

Mille Murach & Associate 4697 Wast Jacquery Avenue Frence Carloma 93722

use physical and logical paging to break messages down into smaller components for display, processing, or both And more! In short, with MFS you'll learn to create formatted screens that are easy for operators to use. And you'll learn what tasks you can handle through MFS instead of having to code for them in your DC

#### 117 examples make complicated things easier to understand

IMS, Part 2 is chock full of illustrate make it easier for you to master IMS DC fou get schematic drawings that show how DC works and syntax summaries of MFS commands. But mod important, you get the screen layouts. MFS format sets, structhe screen layouts, MFS format sets, structure charts, and COBOL code for 8 bus ness programs. Use these as mode's for your own programs, and you'll save your self hours of design, coding, and de

#### Who this book is for

If you're a professional proanalyst, you owe it to yourself to learn about IMS DB and DC. Obviously, that's a must if you're developing BMS applica tions. But even if you're not, you should still undergand BMS to make yourself more

istable for another job If you've tried to learn IMS DC from

other sources, the expenence probably frus-trated you. That's because IMS DC is just

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## NCR Comten doubles 5620's power

Enters price/performance battle with IBM 3720, upgrades throughput, line support

Like the 5620, the 5620XP was de-BY ELISABETH HORWITT ed to meet the communications needs

ST. PAUL, Minn. - Firing the latest salvo in a price/performance battle with IBM's 3720, NCR Comten last week annced an upgraded version of its 5620

The 5620XP model delivers between 2.2 and 3.7 times as much throughput power and supports twice the number of lines as the vendor's older model at a comable price, according to NCR Comten.

remote sites in large, complex set orks that may need to connect a variety IBM and non-IBM terminals with a ystems Network Architecture) back-ne or non-IBM hosts," said David Anon NCR Comten's manager of man

ting and planning.
The 5620 and 5620XP are "positioned r], but the 3720 came after the Anderson said. A 5620XP

equipped with additional communicati systems supports 64 communicatio or CCITT X.25 protocols. The impation of two NCR Comten Int Protocol Converters allows up to 64 asy onous devices to be attached to 32 of the lines, so that the device supe

els in all, the vendor said. NCR Comten is trying to best IBM to the 3720 punch," said John Carosell analyst at Pairfax, Vs., consulting Network Strategies, Inc. "With

ad of [IBM] 9370s and distrib rocessing, users are going to need net-ork concentrators." An NCR Comten or IBM communications processor can ac-cept incoming lines from multiple IBM hosts and multiplex them over a single leased line connection to a remote host, providing significant savings over multi-ple leased lines, Caronells said. IBM's 3720, was introduced in May 1005 Market and 1005 May 1005 Market and 1005 Market

1986. Models 1 and 2 support up to 28 lines: the 3721 expansion unit increases support to 60 lines. Models 11 and 12 support up to 16 lines and two IBM To-ken-Ring connections; 48 lines plus two Token-Ring connections with the expan-

NCR Comten was unable to provide any benchmark figures comparing the 5620XP with the 3720 in terms of power. An NCR Comten 5620XP, supporting up to 32 lines, is available now for about the same price as a comparable 5620 model, the vendor said. The base 5620XP model costs \$16,000, with fully config-

moos: costs \$16,000, with tally config-ured systems ranging up to \$111,482. An expansion feature that allows the 5820XP to support up to 64 lines will re-portedly be available in the fourth quarter for \$11,000. Maintenance fees for the 5620XP are reportedly between 25% and 50% lower than previous NCR Comten 5620 fees.

## Speedy 386 Unix debuts

BY DAVID BRIGHT

SAN JOSE, Calif. - Convergent Technologies, Inc. last week introduced an In-tel Corp. 80386-based multiuser Unix system and personal computer server that the firm claims is the fastest such ma-

chane on the market.

Convergent's offering, to be sold initially to OEMs and then to value-added resellers, will compete against 8038-6 based multisurer machines recently introduced by Alton Computer Systems, Prime Computer, Inc. and Texas Instruments, Inc.

Called the Server PC, the system is built around a 20-MHz microprocessor

su character-oriented terminals or a mix-ture of the two. The system can use Locus Computing Corp. 'a Merge 368 software environment to simultaneously run Con-vergent's implementation of AT&T's Units System V Release 3.0 and Miscrosoft Corp. 's MS-DOS.

According to marketing manager Hen-ry Robinson, Convergent used sophisti-cated design features like a 64K-byte write-back cache memory with zero-wait states to build a very high-performing ma-chine. The system uses a small computer chine. The system uses a small computer systems interface (SCSI) disk drive con-

systems interface (SCSI) dath drive concrition to page disk drive operation.

The Server PC is mid to be compatible with the IBM Personal Computer AT.

The box constains fire 16-bit sleets for PC computer AT.

The box constains fire 16-bit sleets for PC computer AT.

The box constains fire 16-bit sleets for PC computer AT.

The box constains fire 16-bit sleets for the PC computer AT.

First sleet and the page 15-bit sleets for the PC computer AT.

First sleet and PC computer AT.

AT compatible forpy dath drive and room for three additional SCSI perspherals in proteed at 77-000.

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## Prime deskside set to challenge DEC

Potent 50 series system aims to give Microvax II run for money in price/performance arena

#### BY DAVID BRIGHT

NATICK, Mass. - Hoping to strengthe its competitive position against Digital Equipment Corp.'s Microvax II line. Prime Computer, Inc. is scheduled today to announce its most powerful 50 Series

Prime officials claimed that the addi-tion of the new departmental 2455 system provides better price/performance and a better incremental growth path an DEC'a Microvax II syste

However, analysts termed Prime's at ment "a little bit forced," because the crovax's power can be increased through clustering and because DEC has a software advantage. In addition, DEC is believed to have in the works a Microvax III that would leapfrog the performance of the 2455, although it is unclear when that

While all of DEC's Microvax II ma-

HAT WE can do that DEC can't do ... is increase productivity by upgrading users to a more powerful machine while staying in this office-installable kind of environment."

> MARYSCOTT PRIME COMPUTER, INC.

chines run at 0.9 million instructions per second (MIPS), according to analysts' es-timates. Prime's three deskside systems range in performance from 0.85 to 1.6 MIPS. To obtain more performance, DEC customers must either link Microvaxes in works such as Vaxchisters or sump to a much larger VAX 8250, which operates st-1.3 MIPS. The Microvax cannot be upgraded to an 8250.

What we can do that DEC can't do to the same degree is increase productivity by upgrading users to a more powerful machine while staying in this office-installable kind of environment," said Mary Scott, Prime's product manager, "Clus-tering isn't right for everybody."

#### Different philosophy Ret analyst Richard Mikita of Internations

al Data Corp., a Framingham, Mass.-based market research firm, said that in many cases, increasing performance through clustering can be just as practical

as Prime's single-processor method.
"It's just a different philosophy," be said. "The DEC approach would be to provide those small increments of capability in multiple places, not to take a central processor and upgrade it in small incre-ments." Therefore, be added, Prime's "steep-step argument is a little bit forced."

In order to better compete aga Microvax II, Prime needs to concentrate not so much on price/performance as on providing more applications that solve us-ers' problems, stated Kimbail Brown, who tracks the systems market for Data

around the company's VMS operating system, DEC has an advantage over Prime, he said. "You can't fight VMS with

The 50 Series machines all use proprietary processors and the company's Pri-mos operating system, although in late April, Prime modified its traditional proprietary strategy somewhat by introducing s Unix-based multiuser system built

quest, Inc., s San Jose, Calif.-based mar-ket research firm. With products like its Ali-n-1 office environment, which is built nouncement should reasure customers that Prime is still investing in its breadbutter 50 Series. Like the entry-level 2350 and 2450

ns, the 2455 is said to be total compatible with Prime's entire line of superminicomputers through the high-end dual-processor 23.6-MIPS 6550 machine. The 2455 uses a new CPU to boost performance by 23% over its 2450 sister machine. Internal cabinet changes leave

m for three 258M-byte hard disk drives, compared with two that were pre-viously accommodated. The combination of the new processor and the revis net brings maximum memory iron 649 to 12M bytes. A 64K-byte cache memory with a 98% hit rate reportedly makes emory access more efficient.

A base configuration with 4M bytes of emory, s 258M-byte hard disk drive, a

M-byte cartridge tape backup drive, asynchronous comm nse lists for \$62.810. Prime said the systems will be avail-

able immediately.

According to one analyst, a preconfig-ured DEC system would cost approximately \$36,000.



## If You're Considering DB2 If you're looking for the full power of

relational technology, there's just one place to find it: SUPRA" from Gincont'. Because no other DBMS gives you the advanced relational capabilities to reach such high is of performance and productivity Not even DB2 from IBM\*.

life Heublein, Heinz U.S.A., Best Western and over 150 others. And its easy to see why Each day, they realize the rewards of the impossive three-schema architectur. that enables SI PRA to mor above and

## Product brainstorming marks AI conference

From software to systems, knowledge-based intros portray healthy growth in field

#### BY ALAN J. RYAN

SEATTLE - Artificial intelligence developers attending last week's sixth annu-al conference of the American Association for Artificial Intelligence (AAAI) here had several products to choose from to ennce their job functions. AAAI-87, which drew nearly 5,400 us-

s, developers and others interested in AI, is held to further scientific and techno-

View, Calif-based Intellicorp's der stration of its Knowledge Engineering Environment/C Integration Toolkit soft-

ware, which it began shipping last week. The software integrates programs itten in C with knowledge-based applications developed using Intellicorp's LISP-based Knowledge Engineering Environment (KEE) system. The tool list en-ables developers to move among C, KEE and LISP as necessary, depending on which programming language is most apIntel Corp. 80386-based personal com-outers. The KEE system reportedly alfrom Digital Equipment Corp., Sun Mi-crosystems, Inc., Symbolics, Inc., Texas

Teknowledge, Inc. announced plans to

ment Facility, the Copernicus Delivery Facility, the Copernicus Database Integration Facility, the Copernicus Cobol In-tegration Facility and Telxolutions Appli-cations Packs. The rollout is likely to take place in the fall, with the introduction of the Copernicus core products and many of the family's optional features for DEC VAX, Apollo and Sun systems, the compa-

Gensym Corp. in Cambridge, Mass demonstrated its real-time expert system for process control and related applica-tions. Called G2, the system reportedly unages data in real-time environments nd allows dynamic knowledge and rules be represented. Prices for the product start around \$36,000, depending on op

tions and support.

DEC displayed the recently enhanced version of its VAX LISP software, its version of the widely used LISP Al program-

ming language.
VAX LISP Version 2.2 is said to allow ers to integrate AI techniques with ex-ing systems. DEC offers an entry-level VAX system with an AI development lan-guage for less than \$7,000. The same VAX system with a graphics-oriented AI development environment sells for less than \$15,000.

Symbolics unleashes product load As expected, LISP-based workstation maker Symbolics announced a series of hardware and software products at AAAI-87. The new products included the Cloe software package, which the firm said alvs applications to be developed on Sym-lics systems and delivered on 80386-

Symbolics also announced in 80386-based plages in board designed by Norwood, Mass.-based Phoenix Technologies Lld, for Symbolics 3600 systems. The board is said to allow users to run applications under the Units and Microsoft Corp. MS-DOS operating systems on the Symbolics 3600 series under the control of Genera, the standard Symbolics software

The Symbolics SNA 3270 software i terface package, which allows Symbolics as Network Architecture-ba

Symbolics said all of its new products are slated to ship by the end of this year or

early 1988. For companies breaking into the Al field, and for those seeking added potential in Al, Teass Instruments introduced three consulting options svalidable through its Knowledge Engineering Services group. They are the Technology, Application Assentment, the Application Protokype and Al Project Reviews. The Technology Application Assentment was designed for companies that are application of the Project Reviews.

develop a staff of knowledge engi-

The Application Prototype reportedly rovides customers with a system proto

n a subset of a chosen application area.

Al Project Reviews offers a set of four-The consistence of the continue which a senior The knowledge engineer critiques the development process for the customer's knowledge-based system, according to

consulting package



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at of 1-2-3 is the second me

## Computer Associates cooks up data base add-in

BY DOUGLAS BARNEY

SAN JOSE, Calif. - In hopes of osting the position of its Su-4 integrated spreadsheet. Computer Associates International, Inc. said it will offer s data base add-in product by

year — Computer Associates is expected to develop a version of the add-in for archrival and market leader Lotus Development Corn 's 1-2-3 Computer Associates com-

ed data base, right behind Ash-n-Tate's Dhase III. "Many ton-Tate's Dbase III. spreadsheet users use it for a data base, but the data base ca-pability of Lotus [1-2-3] or Supercale is not that strong," said ssioned the project after real-Abraham Pomanski, president

der development by Eric Michelman, the original designer of Reflex, an analytical data base now owned by Borland International. The add-ins will run from within the apreadsheet environ-

ment and will be invoked through function keys or sub-ments, Michelman said. Both Michelman and Pos-

nanski declined to release details of the products, including wheth-er they are at all relational or if they are simply file managers. Both men, however, described the add-ins as focusing on analysis and reporting capabilities. The products will use the inter-face of the spreadsheets they support. Pricing is not yet avail

Similor opproaches Computer Associates' approach to the spreadsheet market is highly similar to that of Lotus. Both firms offer a broad line of products that work with the core spreadsheet product. Lotus of rs a natural language interface desktop accessories, a report writer and prepackaged data Computer Associates offers spreadsheet auditing, a cell-notation product and a utility for printing large spreadsheets side

ly, however, when it comes to site licensing, networking and copy protection. While Lotus has announced intentions to release a network version of 1-2-3, the firm is far behind schedule. Lo tus's software is copy protected and no site licenses involving on

site duplication are available On the other hand, Computer Associates has aggressively sold unlimited site licenses. The company's product is not copy protected and is available for local-

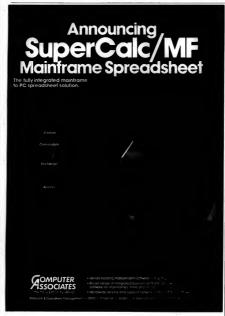
## AT&T profits surge by 41%

NEW YORK - Although sale of its computers and telecom-munications hardware continued to be sluggish, AT&T reported last week that strong revenue from long-distance services propelled the firm to s 41% surge in profits in the second quarter nded June 30. AT&T also began to see

benefits from its work force re-ductions of 1986. The firm said its expenses in the quarter de-clined 4.6% from year-earlier levels to \$7.28 billion. AT&T reported earn \$596 million, or 55 cents per share, up from \$422 million, or

37 cents per share, in the second quarter of 1986. Revenue was flat at \$8.4 billion, compared with \$8.42 billion last year. The telecommunications g nt said sales of office teles

systems, switches and computers rose just 1.5% to \$2.5 billio Services revenue increases nue from rentals fell 25% to \$931 million. CLINTON WILDER



via a special calling card number.

only become part of an SDN

Previously, a location could

## AT&T holds out carrot to SDN resisters

Dial-up access option makes service more affordable for sites without dedicated line connection

BY ELISABETH HORWITT

WASHINGTON, D.C. - In an effort to beef up user demand for its Software Defined Network service, AT&T ansunced a dial-up access option at makes the offering cost-effective for user sites that cannot justify a dedicated line connec-

SDN is geared toward large corporations with at least 20 sites that place 40% of their calls within the company, and it provides many private-network features over a dial-up network said Glenn Starr, AT&T's prod uct manager for SDN services. calls travel AT&T's public-switched network, each calling location within a given SDN user community has a unique directory number that is housed in an AT&T data base. The data base, which is unique to each SDN community, permits the AT&T system to provide call screening, user-dened routing and accounting for later billing purposes. A uniform dialing plan allows all users with-in an SDN community to call each other using a seven-digit number. The service is less exive than private-line con-

month, Starr said. Pricing in ballpark SDN also provides price breaks comparable to WATS or AT&T's Megacom over ordi

Starr noted. Recently, AT&T in-

troduced a remote calling fea-

ture that lets people on the road dial into the SDN network and

community through a dedi link to the nearest AT&T office The new tariff proposed by AT&T would allow locations to use the dial-up network to access the SDN network. In addition to a regular telephone number, the figure temperature manner, the fier must dial in an identifica-on number that tells the local carrier to route the call to a par ticular SDN trunk group on the

The proposed tariff "is a log-cal extension of SDN that dem onstrates AT&T's good faith that it isn't trying to get custom-ers to bypass the local telephone companies," said Peter Bern-stein, a senior research analyst at the New York consulting firm Probe Research, Inc. "It will

take advantage of SDN pricing squeeze MCI Communications cations Co. just like everything else AT&T does, by making it er for customers to access The new SDN offering re-

ortedly replaces a "stan witched-access" version version of SDN that called for a dedicated line connection between the customer and the local carrier's cen tral office and required the di vested Bell operating compa to install special features on their

Customers not interested The AT&T filing reportedly said that the tariff could not be costcustomers. One reason for the service's lack of success is local carriers' refusal to support ser-vice at their central offices.

The tariff is scheduled to ta ect Aug. 27, given Federal oval, AT&T said. As part of the same filing, AT&T estabd rates for dial-up SDN that are "slightly higher than their Pro America II rates." Starr said. AT&T also filed for a 6% reduction in SDN calls that originate over switched-access lines and are completed over specialaccess lines, or vice versa, and ar

8% price cut for calls that are originated and completed over special-access lines MCI announced earlier this year a similar dial-up access feaure for its V-net software-de ned network service. Both carriers' dial-up option

are scheduled to be available in the same third-quarter time frame. MCI said it plans to file in August for V-net rate cuts grared to keep the service com etitive with AT&T's SDN, according to MCI's director of network services, Steven Johnson Sprint was unavailable for com-

## **DECoffers** doubled-up Microvax II

BY DAVID BRIGHT

MAYNARD, Mass. — Digital Equipment Corp. recently anter system that consists of dual Microvax II systems and cial software that runs under DEC's VMS operating system

DEC and it is positioning the Microprocessor implementation of a Reliable Architecture, or MIRA, system for dedicated control applications that require highly available communications with terminals, sensors and other computers. Targeted appli tions, which the company ex-pects OEMs and value-added resellers to address, include

the system is not intended to ete with offerings from ea-shed fault-tolerant computer vendors like Stratus Computer, Inc. and Tandem Comp "We don't see it as d competition with anything," he "It's for people with a cer-

Operations are conducted on one of the Microvaxs, which functions as a master system, while the second machine serves as a standby. If the master sysem malfunctions, control of any attached devices will be switched to the standby unit. switched to the standby unit.
Prices start at \$66,820. Late summer availability is planned.

## Gate links 3Com E-mail, IBM hosts

BY DAVID BRIGHT

SANTA CLARA, Calif. - 3Com Corp. and Soft-Switch, Inc. last week announced a software ic mail between 3Com local-area networks and IBM mainframes. A week earlier, 3Com rival Novell, Inc. had introduced an

electronic mail connection link-ing its networks with electronic ems on computers from Digital Equipment Corp. and

ucts manager Peter Koolish said the key difference beautiful two methods is that Novell user proprietary protocols, while 3Com uses IBM's Systems Net-

SNADS migrotton "It's true that today, you can Associly from only connect directly from [3Com's] 3+ to the IBM Distrib uted Office Support System, but see more and more people mov-ing to SNADS," Koolish said. The product, which resides on an IBM Personal Computer on an law resease Composes AT or compatible system, forms a direct link between 3Com\*s 3+Mail system and Soft-Switch's SNADS Gateway/MVS or IBM's Disous on an IBM bost

computer running IBM's MVS Through these mail-server connections, users of the 3Com

have the ability to ex-

ing the IBM System/36 and 38 the \$520 and the 8100

Efficiency the goal Other Soft-Switch products can be used to route electronic mail through the IBM host to systems. from DEC and Wang Laborato

ries, Inc. However, using that method rould not be as efficient as using a direct link, according to Mi-chael Zisman, Soft-Switch's

Gateway licenses are priced between \$3,000 and \$5,000, demding on volume. Availability is plan



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## Airlines in dogfight over reservation system

BY DAVID A. LUDLUM

Already sharpened as a result of recent mergers, the competition ong airline reservation sysns should climb to intercontinental proportions this week.
On Tuesday, a group of major make an announcement about bringing a U.S. partner into its efforts to build a sophisticated European reservation system. according to a spokesman for merican Airlines

The four European carriers Lufthansa German Airlines.

Spain and Scandinavian Airlines System - reportedly have been negotiating with American and Texas Air Corp. regarding par-ticination in Amadeus, the Euronesn reservation system they say they plan to build. sture on the Amadeus

escalated recently when a group of three other European airlin with rival plans to develop a reservation system announced that United Airlines would join its project. Incentives for the U.S. airlines include the prospects of replicating in Europe the considerable profits of U.S. res sinesses, enhancing the capa-ties of their U.S. systems and strengthening various joint mareting agreements with the European carriers through closes

"It's basically to make son money," said Rob Doughty, a enokeemen for Hoised merican's parent comp AMR Corp., operates the Sobre reservation system, which lear the U.S. market in travel agencies served. Sabre currently has

about a 36% share of that man ket. The Apolio system on by United's parent, Allegis Corp., is No. 2, with about a 25% share of the market. System One, serving Texas Air's Continental Airlines and

Eastern Airlines, has a share of about 11% but has been gaining modestly since Texas Air bought Eastern last fall, according to Wall Street estimates

Equity retention on lasue The Amadeus negotiations re-

volve, in part, around the issue of whether a U.S. carrier would share in ownership of the sys tem. "I suspect the decision will not depend solely on the quality of the software. Retention of equity in the venture could be a ma or source of contention," said Michael Friedman, a consultant with the New York firm Sebg. Helbesen & Eichner, Inc., which conducted a study on construction of a European reservation system for the Association of European Airlines (AEA). American has out a multinart

menu-like proposal on the table and "will participate at whatever level makes them comfortable said Joe Stroop, a spokesman for the airline. "If they want us to take a piece of the pie, we will do that. If they want us to be a software vendor, we will do that American nees reservation

estems not only as the arms of an airline but also as successful usinesses in and of themselves, Stroop said. "We are in the busi ness of selling computer services and support. I think that's the Christmas tree, and everything else is going to be ornaments.

be said. Texas Air spokeswoman Eva Archer Smith declined comment on the specifics of the negotis-tions. "We are not discussing the fine details of the contract at all " she said

This spring, in response to the expansion of Sabre and Apol-io in Europe, the AEA commissioned the study on the feasibil ty of a joint Europear reservation system. While the results suggested construction of a single network, the two rival plans emerged.

The Amadeus partners are expected to invest \$300 million, with IBM getting \$140 milion for use of its hardware. The system is scheduled to be in opera tion by mid-1989 and to break even financially by 1993.

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## MRP scofflaws under DOD gun

#### BY MITCH BETTS

WASHINGTON, D.C. - The Department of Defense's (DOD) ty inspector general last ek urged a tougher crackdown on defense contractors whom he said allow their manuturing resource planning (MRP) systems to overcharge the government in an elaborate

The testimony by Derek J. Vander Schaaf at a congressional hearing was the latest development in an ongoing controversy over DOD audits indicating that the MRP systems implemented by many defense contractors do not comply with the Pentagon's cost accounting and contracting regulations [CW, May 11].

MRP systems, which regulate the flow of parts and assign costs in manufacturing plants. frequently make numerous inventory transfers in order to improve production efficiency. Consequently, many MRP systems do not peg each part and its cost to a single contract,

At a previous hearing, the Aerospace Industries Associa-tion argued that Pentagon regu-lations are flawed and "out of sync" with modern manufacturing systems [CW, May 25].

The deputy inspector general, however, said Pentagon audits have uncovered cases of excess inventories, floating inventories not assigned to any contract and transfers of parts between government and com-

At one contractor site, Vander Schaaf said, the auditors noted that about 1.9 million material transfers were made between

remment and commercial contracts during an 18-month riod. Contractor officials acowledged that for at least two ars, their MRP system had not properly allocated the costs of parts to the contracts for which ry were purchased, be said. "Materials make up an esti

stake, there is a tremendous incentive for con tice what I call the 'inve Vander School testigame, "Vander Schaar sew-fied. He said the chief executives of defense contractors should be required to sign s document cer-tifying — under penalty of law — that their MRP systems com-

ply with Pentagon regulations. nies that fail to certify their systems could be the tar-gets of audits and could be penaled with reduced progress pay-ents, be said, in order to put are on them to make their MRP systems comply with Pen-

Vander Schaaf complained that his recommendation for cortification was rejected by Pentagon management as premature while the Defense Contract Au-dit Agency conducts its investi-gation. However, he said the inspector general's office will be

conducting its own year-long in-vestigation of the problem. Meanwhile, key members of Congress said they will push for

## Mac tools get revamp

Compatibility with Appleshare emphasized CUPERTINO, Cald. - Apple

Computer, Inc. last week announced new versions of its Macdraw, Macwrite, Macproject and Macterminal software that bring those packages into compatibility wi share file server. slity with the Apple-

Each program now takes ad vantage of the features of Ap-ple's Macintosh II and Macintosh SE personal computers, the company said.

Macdraw Version 1.9.5.
which sells for \$195, is said to be

compatible with all versions of the Macintosh. It loads 20% to 75% faster than the older ver sion of Macdraw and includes a momber in the title har a cancel button in the printing dialog box and additional command keys.

Apple said.
Additionally, Macdraw is said to support up to 54 fonts and to offer what-you-see-is-what-you get fechnique text

Version 4.6 of Macwrite is competible with Macintosh II. Macintosh SE and full-page monnors, it now supports arrow

Laserwriter ruler, according to the vendor. It sells for \$125. Macproject Version 1.2, which is compatible with all Macintosh systems with at least 512K bytes of memory, supports color when used with the Macintosh II, the company said. Its price is \$195.

The Macdraw, Macwrite and Macproject programs will be come the property of Claris Corp., Apple's application soft-ware subsidiary, according to Kyle Mashima, manager of Ap-ple's software product manage-

ion 2.2 of Macterminal in said to be compatible with the Apple Keyboard and Apple Ex sed Keyboard and up the operation of the Enter key in IBM 3278 mode. It sells for \$125 and should be used with the universal system and finder on the Macintosh Plus. Mac SE and Mec II, according to the

company.

Macdraw, Macproject and Macterminal are available now; Macwrite reportedly will be Tower series and the Computer

## Ridge broadens low-end reach, supports System V

BY JAMES CONNOLLY

SANTA CLARA, Calif. -- Ridge Computers last week announced AT&T Unix System V, Release 2 support for a new entry-level superminicomputer, which the company expects will expand its user base from technical com puting into commercial applica ions such as software developand data

management. The Ridge 32 Turbo/RX runs Ridge's RX/V, which is the System V implementation previously available on the company's high-end 3200 Model 95 super-minicomputer. The 32 Turbo/RX effectively replaces the previous low-end Ridge 32/100 and Ridge 32/300. Those ma-chines ran Ridge's Unix-like ROS operating system and remain available but are not being Ridge Vice-President of Market ing Larry Lunetta

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cache storage, compared with 256 bytes on the 32/100 and 32/300 "Technical computing has been the traditional environment for Ridge, but we expect to

support, the 32-user 32 Tur- for things like time-bo/RX features 16K bytes of ware development

Alms of Tower, Power The 32 Turbo/RX uses the same reduced instruction set computer technology as the 32/100 and

dor at 2.3 million instructions per second (MIPS). Lunetta said the MIPS rating is based on comparisons between the speed at ich applications run on the Ridge machine and on a 1-MIPS Digital Equipment Corp. VAX-11/780. Lunctta positioned the system against Unix-based sys-tems such as the NCR Corp.

Consoles, Inc. Power 6/32 se-The 32 Turbo/RX is availab with 4M to 32M bytes of memo-ry, eight to 32 RS-232 ports, a 60M-byte cartridge tape drive and a 150M or 300M-byte hard

disk drive. It has a base price of \$31,900 Ridge also st shipped the 3200 Model 95, an nounced in December.



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## **EDITORIAL** Merger mania

Item: "Borland to buy Ansa" Item: "Competition thriving despite lesson

buy-outs"

ty-outs
Item: "Merger giant swallows Uccel"
Item: "Fox Research scooped up by DCA"
Item: "Sale of D&B's Nornad2 imminent"

here's nothing unusual about merger and acquisition activity in business — except that the headlines above all came from Computerworld in the last two months alone. And, as the headlines indicate, the urge to merge and acquire cuts a broad swath across the entire industry, from large systems software to networking to leasing.

For companies like Broadview Associates, high-tech matchmakers specializing in software companies, business has been great. But for customers trying to cement purchase decisions and forge lasting ties with vendors, the frenetic pace of merger activity is producing big headaches.

Simply put, there's no way of telling what the impact of a merger is going to be on a range of issues, such as support for existing products, upgrades to those products and pricing of product lines, especially when a merger yests a company with a large market share in a particular line.

This is not to suggest that the impact of mergers and acquisitions is inherently negative. The biggest merger in the industry, the Burroughs Corp.-Sperry Corp. pact, has resulted in a \$10 billion colossus that has shaved millions of dollars in administrative overhead - savings that can be passed directly or indirectly to customers. Similarly, IBM's purchase of Rolm Corp. has generally resulted in a more clearly defined direction for Rolm's product lines

In the case of the recent \$500 million purchase of Uccel Corp. by Computer Associates International. Inc., many questions have been raised about continued support by Computer Associates of Uccel's software.

The point to note is that Uccel users are actively involved in airing their concerns directly to Computer Associates and working with that company to spot potential problems. This strategy, vigorously pursued, is a trump card, because the vendor ultimately needs the continued support of the customer base a lot more than the collective customer base needs any one vendor.

Honeywell, Inc. users, for example, have extracted notable verbal commitments from Honeywell Bull, Inc. for continued support and enhancement of key product lines.

That the pace of merger activity will continue is almost assured by the dynamics of the computer marketplace today. For vendors, diversifying product lines is imperative to survival, and buying an existing player is easier and quicker than starting your own team in niche markets. And the stock market of the past two years has generated record stock prices, making outright pur-

chases with company shares easier than ever. But in the fiercely competitive computer markets, users have tremendous clout, especially in a merger situation. Use it.

#### LETTERS TO THE EDITOR

#### Innovation hits

I agree with much of what was said about innovation in the in-dustry in "Innovation: Credit only where it's due" [CW, June 15]. However, I would like to point out a marked resemblance between the user interface of Apple Computer, Inc.'s Macin-tosh operating system and cerin Xerox Corp. software.

I feel the Mac is an excellent

machine, and its appearance has changed the market significant-iv, but it too has benefited from the sharing of ideas that is an important part of the industry. IBM's Personal System/2 Mi-

cro Channel architecture is an elegant method of improving throughput without just going to faster clock speeds. I think this is s true innovation, but even if it is not. I would like to see IBM set credit for bringing it to the mar-ket, just as I would like Apple to get credit for its excellent development and marketing work.

Rochester, N.Y.

Active participants We were distressed to read the article about the development of a survical information system at Rush Presbyterian-St. Luke's cal Center ICW. June 11.

The various parties to the process of developing the sys-tem have participated fully from the project's inception. Years ago, we at Rush-Presbyterian endorsed the concept of decentralized systems develop within the context of the larger uting and information sys tems environment. Integration of systems to the appropriate degree has been a key objective in systems development for a considerable time

learned that the collaboration of our MiS group, which most recently has come to include ad on of our AT&T Infor Systems Network, essential to systems integration, regardless of whether systems opment occurs centrally within MIS or in the decentral used mode. The only real variable the MIS group, not whether not the MIS group is involved. ecentralised computing over the years when nor

is the extent of involvement of It is true that we have allowed funding has been used to support the respective efforts. In these cases, however, the developers they could function adequately for their limited purposes in a

This week in history

Thousands of travelers in New York City are stranded after dozens of airline and hotel reservations systems go down when a lightning bolt knocks out a consolidated Ed-ison substation and shuts off power at more than 3,300 computer centers serving more than 2.7 million custom-

July 19, 1982 The Federal Bureau of Investigation, reacting to allega-tions that Hitachi Ltd. and another Japanese company tried to steal IBM trade secrets, rejects a contract bid involv Hitachi-manuf unes in favor of IBM's higher priced machines.

ree-standing mode. We have worked hard and effectively to ensure that our 8,000 employees, many of whom are potential systems developers, understand the benefits of systems integration and the po testial dysfunction associated with computing "in a vacuum." We regret the disunity portrayed in the article. We ren sitted to integration of our surgical information system into the larger information system environment at Rush-Presby

Gordon B. Bass Associate Vice-President and Associate Administrator Surgical Sciences & Services Walter Menni Assistant Vice-Preside iate Admini

Date Proce. Ruch Presbuterian St. Luke Medical Cente

# What bugginess?

the headline "Users: 386 or ating system buggy" [CW, ]

The article basically presents the following facts: The Software Link, Inc. shipped its first release of PC-MOS/386: 2,500 orders were filled in the first fo weeks of shipping; and buyers of the first release will get a free upgrade. It also pointed out four well-received aspects of the product, two specific incompati-bilities and the fact that we for got to tell users about a special command required to use the Compaq Computer Corp. tape

I did not see anything in the article to substantiate the idea of "bugginess." That is not to say intinued on page 22

## A portrait of the artist as a PC Contemplating the future of desktop publishing as its software swells

IOHN KIRKLEY will happen when everybody be-

comes their own art director, and we are mundated by tidal waves of memos, leted by total waves of memos, let-ters, pamphlets, reports, mono-graphs and books prepared on the desktop publishing systems that are spreading through American business like the An-

Armed with a seemingly infi-nite number of typefaces and to reproduce pictures, rary clip art — in short, images culled from everything from The

workers in may go on a binge of typographic elabora-tion and decoration that will make the Baroque period pale by comparison, And cumbered by consid erations of taste or

erations of taste or even the most basic sense of design.

One might argue that deaktop pub-lishing systems are not thet widespread. ed software and a in ser printer make up capital expen

that is not to be succeed at. And yet, if well established techno-logical trends continue, system es will continue to plun It is also a good bet that deak-top publishing will begin to lose its individuality in a few years as greater graphics capabilities are

greater graphics capabilities are built into inexpensive software packages aimed at the general packages aimed at the general office information systems mar-ket. Adding to this merging of the technologies in the capability of IBM's PS/2 machines with their high speed, wide bandwidth and internal data buses capable ne true compound docu-

Some industry observers see corporate deaktop publishing going through the same cycle as did the PC: initial widespread bootlegging as uners seek to bypans cumbersome service depart-ments, followed by alarmed re-action from top management and

Maybe so. But the barn door Kirkley, a former editor of Data

is already open and Aldus Corp., Adobe Systems, Inc. and others are fueling the fires of user-gen-

erated publishing.

Now at this point you may wonder if I'm not indulging in some sort of sesthetic snobbery.

Eyeglasses in hand, scented handkerchief to the nostrils, we watch in borror as the unwashed sses invade what was once the sacred realm of a highly trained brotherhood of graphic

artists.

Could be. Perhaps what is really happening is that there is about to be a modern-day pubg Re ised by an elevated sense of style and a sensitivity to the enha

in some 60-odd pages, the funds-mentals of page layout, the grid system, use of headlines, graphic images, borders, rules and even such niceties as kerning and dealing with widows and oruns. It's a good little book, a etaste of what's to come.

keen on anarchy of any kind. They thrive on regularity, cor vention and standardination. don't like surprises," is a management staple response. When it comes to graphics, managers often spend great quantities of money to create a distinctive corporate look that extends from the annual report to the logo on the back of the company's bowl-

Those concerned with mat

rise to where not only the workplace, but our entire environ-ment, will be permeated by an first be appalled and then the appailed and then ured into action when they fire that all manner of corre-indence is being issued in the apparty a name by a work force inped with both denktop pub-ing systems and their own dly individualistic sense of impatience with the crass and the ugly. There could be a uni-versal demand for the creative. the subtle, the artistic - an ackwledgement and extension of Bushaus ideal that the design of everyday objects reflects the highest aesthetic merging of form and function. sign. What will they do? Issue sta

Sounds great. But what is more likely is a hodgepodge of graphic experimentalism spew-ing out of myriads of deaktop ing out of myrinds of deviktop systems; attempts to squeeze five columns of type into an 8½-in, wide sheet of puper; using six different type facts in one matter of the state of the state of pictorial decoration.

Addus, the Seattle consuper, that helped accelerate the desit-top revolution when it attraction produced fraguesaler in 1985, has agod basic design excepts to the average user. When you buy its package, you get a fittle book its package, you get a fittle book in the average user.

level of artistic exp

its package, you get a little book called The Aldus Guide to Basic

And so, after a period of fer-ment, desktop publishing will be folded into office systems, and there will be corporate hand-books dictating which typefaces be used under what circum-

## Modern marketing's love affair with Al

A catchall term promotes "gee-whiz" products

Weicome to the world of artificial ask me why I

chose a field like artifical intelli gence to write about. After all most people think Al stands for artificial insemination, which makes for a lot more office jokes Well, first of all, I don't have any kids to ask me probing ques-tions about the disk drive indus-try, and I don't have a regular

HARVEY NEWORIST

try, and I don't have a regular burber to help me better under-stand the semiconductor indu-try. I just think Al happens to be a fairly intriguing, fairly new bechnology that is finding its way into a variety of practical business applications. And there are a lot of companies doing some incredible things with it: American Express Co., Citicorp, Travelers Insurance Co., Procter & Gam-ble Co. and Ford Motor Co. to name a few.

Unfortunately, there are other companies doing some less than great things with AI — which brings us to the subject of AI hype.

One of the things that continually amazes me is how many

ually amazes me is how many groups use the Al tag to promote their products simply because they feel that it's enough of a "gee-whin" term to get people to buy something. Let's run themselve our serverales.

through some examples.

A very large diskette company (which shall remain nameless, but they make excellent tapes and diskettes) has been running a full-page ad in personal com-

a hal-page at an personal com-puting magazines that shows a pair of robots (a is C-3PO of "Star Wars") operating on a third robot. One robot is hunched over the patient; his name is obviously Igor. The other is holding aloft a diskette surdards, of course, much like the restrictions now imposed by management regarding the ac-quisition and use of PC hardware rounded by various electrical rounded by various electrical sparts and pyrotechnics in a some right out of "The Bride of Frankmestent." The bradine reads, "Give the gift of intelligence, Free." The ad goes on to may that specially marked boxes of this company's diskettes comisin free Al advance, a \$200 value. Got that? \$200 worth of artificial ingelligence for free. and software within a compa ry simply, if you're an IBM op, you don't buy from Apple mputer, Inc. If you're a stylis-Computer, Inc. If you're a stylin-tically conservative Helvetica and Times Roman typeface hind of corporation, you will not toler-ate demented excursions into Balloon Bold or Wess Italic by

First of all, that 'specially marked box "stuff belongs on the cereal shelves of supermarkets. where you can get away with

cul atteligence and other schanced high-

promises of big things inside the box because the average user is a 4-year old.
Second, I can just see some young, enthusiastic engineer running into the executive ofter

lunchroom with a new package of these diskettes yelling "Boss. look! Now our company can use real artificial intellience with only a \$20 investment! Isn't the You might inugh at this scene, but don't think it won't happen. Consider another example. A

relatively new startup company has invented an electronically inchine, which is sort of like "Ro bie the Robot Meets Nautilus Rob Based on information it stored in previous workouts and sust how frequently you use the system, the machine keeps track of your progress during a workout. But get this: The company clair telligence to perform these func-

Al and the ego Imagine what artifical intelligence could do to a person's ego at a bealth club. Incorporate some expert system technology, a litte voice synthesis and recog-nition, and voils! You get the fol-

"Hello, Dana. Long time, no see. Probably too busy to exer-cise that far-from-perfect body of yours, right? Well, not to wor-ry. My knowledge base says you've paid your membership in full until 1988, so we have your oney anyway. OK, come sit over here on the leg-lift chair." Sufficiently humilated. Dans lowers himself onto the artificial-

ly intelligent seat.
"Good God, Dana! What have you been doing for the last three weeks, four days, nine hours, and 52 minutes? Are Twinkies the only food in your diet? You've gained 1.2 kilograms! Have you no pride, no discipline? You must have blown your last paycheck on discount chocoletes. Well, no matter, we'll take care of you. Let's start with 300 leg lifts. One, two...

Yet the winner in the Al hype club, surprisingly, is IBM. Dur-ing a series of TV advertisements last year, IBM demon-strated the wonders of its voice recognition system by having a woman dictate into her computer the words, write home right now Guess what? The video

screen printed up each word im-mediately and correctly — spelling, grammar, punctuation, ev-Continued on page 22

#### Love affair FROM PAGE 21

thing. And guesa what else? The voice system isn't available to the public, IBM doesn't even sell it because it's not a product It's still in the research stage, and there are no plans to market it in the near future. And don't believe the machine responds as fast to the spoken word in real life as it did in the TV ad.

To be fair, using AI to generate consumer interest isn't limit-ed to business products; it has even extended beyond primetime TV ads to prime-time television shows. Who could get away with using AI to gain rat-ings points? The answer is the perfect combination of computer technology and cynical huckster-

In one of the early episodes Max confronted the computer named A7 that controls and maes at will the per s of the world's citic can a computer do such horrible ngs? Because it is an "artificial elligence computer," Max rns. But on TV, as in real life. ther reasoning triumphs and ultimately falls victim to arti-

ficial emotion. Many of the successful vendors of AI-based products have taken to referring to their produrts by the specific area of technology, such as expert systems, natural language, machine vision and so on instead of using the term artificial intelligence. Al has come to be a catchall name for all those technologies that attempt to emulate some area of human behavior but that doesn't mean it's the most ap-

#### Bugginess FROM PAGE 20

that bugs do not exist - v know of some specific bugs and incompatibilities, and nobody in this business would expect differently from any product, much less an operating system (hence the free upgrade). In fact, we have shipped more than 3,000 PC-MOS/386 packages to date, and only 14 customers have taken advantage of our 30-day mon

ey-back guarantee. Feedback has been overwhelmingly entha-I know that CW is a fine prod uct, even if there is an occasi glitch. Your readers should it the same about PC-MOS/386.

Rod Roam Director of Research and Development The Software Link, Inc.

## Questions data

I read the article about Dataero Research Corp. 'a survey of miniuter user satisfaction (CW, June 22] with interest. If IBM's System/38 does deliver the highest satisfaction rating in the survey, that is critical to our firm, which specializes in software for

## **Portrait** FROM PAGE 21

be included on the printed page. How flexible these guidelines will be will depend on the individusi comorate culture So another revo have been quashed. Art direc-

Network terminals, minis and PCs easily. The latest breakthrough

that system. We do not question that the System/38 can deliver that satisfaction, but we do question the validity of the data on which the survey is based.

If one looked at the data, he might assume that Hewlett-Packard Co.'s HP 3000 uners

were the most numerous in the field, followed by Wang Laboratories, Inc. VS users and NCR 900 ITX users. This ald be concluded because 37.7% of the respondents were HP users, 22.2% were Wang and 15% were NCR users.

Imagine the surprise to lea at the survey represented different sample uses from each ased on Computer Intel nce data in January, the sur conses covered 8.4% of all NCR users, 3.8% of Wang VS ers and 3.8% of Uniters Corp. B 1900 users. The responses also covered 0.6% of System/38 users, 1.4% of Digital Equip-ment Corp. VAX II users and

0.1% of IBM System/36 users There are many reasons for changing sampling rates in a sur-vey. Such variability of sample sizes means that you cannot ske any statistically valid inferences about differences in oversatisfaction levels between users of various vendors' hard-

tors will ply their trade in peace once more. Convention and stability will be the order of the day. But just as the corporate arbiters of taste sigh in reber, some-where out there, inexpensive video communications devices are being designed.

Think of it. every worker a

deo director, a producer ... yes, even a star.

There is a rede ough. Scanning the data, one said notice the range of overall satisfaction scores was pretty high. From that, one might conde that minicon were a fairly content lot and that what matters is not the hardware vendor but rather the suitability of the software to the task

Mark Lieberman Vice-President of Marketing Friedman and Associates, Inc. Deerfield, III

#### Ahead of time

John R. Vacca's article, "Al diag noses MVS ailments" [CW, June 81 destroyed its credibility in the first sentence. "Twenty years ago, operators of IBM's MVS operating system provided both problem-handling expertise and control over the normal allocato of computing resources."
In 1967, MVS was not eve imagined. IBM still regarded vir-tual storage as a blue-sky techtual storage as a blue-sky tech-nique, not one appropriate to its mainstream product line. IBM was still struggling to get OS/360 to work reliably and had no inclination to fund a massive

The only paging software that IM released in the 1960s was in support of the 360/67. CP/67 was originally a pair of research projects on a modified 360/40: this is the system that evolves into VMF/370 and into MV/SI and VM/XA and had nothing to do with the development of MVS. Time Sharing System (TSS/360) was a soph system that, in many ways, was

superior to MVS (especially with the TSS/370 RPQs) but again as not an ancestor to MVS. During the 1960s, IBM was considering the development of cided that it did not have the re-sources to develop both LEOS and OS/VS. So not only was MVS not around 20 years ago,

mitment to develop it. Seymour J. Meta Annandale, Va.

## out there was not even a com-Filling wish list

I found the roundtable on Cobol code restructuring [CW, June 29] one of the more insightful summaries on the state of the art this arena to date. Among the issues - or wish

es — raised were the need to enderstand the code, deal with other types of code and dialects, be able to run on different maines, bridge to other tools ich as code generators an urth-generation and document the code and sup port the maintenance prog Meta Systems Reverse En-

gineering's approach addresses all of these needs and more, By racting the code to a high language encyclopedi which runs on most compo and operating systems, all of these wishes can and have been met by our current customers. Richard J. Welke, Ph.D.

sident and Chief Esecutive Meta Systems Reverse Engineerin Ann Arbor, Mick



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## SOFTWARE & SERVICES

#### SOFT TALK

William Immon

#### A better DSS benchmark

Many measures of the performance of decision-support soft-ware (DSS) rate the number of transactions per second, but the nature of DSS processing is not oriented toward transactions. I would like to propose a meathat considers the number of active end users.

The decision-support world is one that is typified by long reports, ad hoc analysis, unscheduled and unstructured processing and so forth. The very e of the decision-su

world is one of unpredictable processing. End-user computing is often synonymous with decision-support processing, where the long-term directions of the enterprise are being considered. Transactions are not the norm cessing. Certainly transactions can be run in a DSS world, but

they are second-class citizens are second-causs causeus pared with the more normal processing that occurs. This "more normal" prosing typically includes: eports - summaries of activities, events and so on. Merges — "relational joins" of data bases in order to create meaningful Cartesian products

• Extracts — analysis of sub-

sets of data

## Users praise frame technology

Say method saves money, increases flexibility in Cobol programming

BY CHARLES BABCOCK Users of a development method called "frame technology" say it

gives them an inventory of reus-able Cobol parts from which they can construct applications in a speedy assembly line-like fash-

Sold under the trade name Computer Automated Programming (CAP), the development control process for calling these modules and linking them to-

CAP is a product from Toron-to-based toolmaker Netron, Inc. and has been available since 1983. It is said to be able to proe mainframe Cobol sour code from a system that works on either an IBM mainframe or Personal Computer, a Digital Equipment Corp. VAX or a Wang Laboratories, Inc. VS

CAP's acceptance in the market-place has been slow, but two

nent users say it has become an accepted development method in their shops. "We see a potential 50% sav-[in the cost of application de-opment]. We can generate 80% to 90% of an application from standard frames," says Bernard Renois, head of the cor-

rate segments department of information management for The Hartford Insurance Group.

low CAP works A Netron customer receives 30 modules of code and a developnt process that invokes the as from a strict hierarchy.

ty in the hands of programmers. But users report that they like the amount of code they can genrate without resorting to cus

ogy, Paul G. Bassett, vice-presi- At the bottom of the hierarchy is dent of research at Netron, says a set of generic frames contain-CAP's main benefit is its flexibiling code that can be used with many applications to control such things as screen formats, I/O controls or the reading of ipformation from a field, according

Netron frame hierarchy

Eighty percent to 85% of At the top of the hierarchy ts the specification frame. the time, we can go with just those frames," says Dale R. Nowhich contains the custom parts

votnisk, supervisor of systems and programming at Koppers

of the application written by a staff programmer. Included in that frame is a ethod of calling lower level mes for parts of the applica-

> In between the specification frame and lower level frames are

## Graphics for MVS

Computer Associates offers reporting option

GARDEN CITY, N.Y. - Computer Associates International, Inc. is offering graphics report-ing with its IBM MVS operating system utilities as a direct spinoff of its acquisition late last year of Integrated Software Systems

Corp.
The \$5.550 Graphics Reporting Option was designed to work with CA-Umcenter, the vendor's package of operating system utilities allowing greater auto-mated control of the data pro-

The Graphics Reporting Op-tion also was designed to work with the CA-Top Secret security product, CA-Jars job accounting product, CA-Dynam/TLMS tape library manager, CA-Dispatch report printing and distribution product and CA-Scheduler production scheduling system.

System operators can use the hics reporting option to depict what they deem to be critical information in bar charts, pie charts or piot graphs, said Mi-chael Guido, president of Com-puter Associates' Systems Prodsacts Division

· BEI's Combet helps or courseware. Page 27.

Golden Key turns Unix

tems. Page 27.

#### 140 MVS INSTALLATIONS SAVE TIME AND MONEY WITH BETA SYSTEMS' OUTPUT MANAGEMENT PRODUCTS, YOURS CAN TOO.

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#### Frames FROM PAGE 23

mid-level frames that assert various degrees of control over the checking," Bassett says.

Some of the frames can be modified by a staff programmer to fit a particular application, al-though the CAP library version

"A mid-level frame might understand how to process a transaction, grabbing information from a screen and throwing it out to another frame for error Each frame contains what might be described as a subrou-tine or module of reusable code. but it actually differs from both

Unlike a subroutine, a frame

can be used with many applica- frame in the hierarchy tapping

"A frame is like a generalized engine for many cars. A frame looks for similarities across unines, then you taifor it for the use you want," Ren-005 523% Unlike a module of reusable

code, a frame is not static. It can of the application, users say. We have reduced the area of procedure, with some higher maintenance by a con-

the correct variation for the ap cation. Bassett says Because the staff-writt code in an application is con-tained in the specification frame, ace effort is focus there. Typically, the specifi tion frame contains 10% to 20%

margin," Renois says. CAP has procedures and com mand statements that require two to three months of training, according to Koppers' Novot-niak says. The frames contain variable names that refer to the next frame to be invoked. "I would use MAINT ST1 to call a standard subroutine," Novot-niak notes, adding that the refer-ence can be altered by inserting the name of another frame in its

Break points can also be in serted into a frame to allow for the addition of data or other custom programming procedures, be says.

Add frames cautiously Customers may add their own frames to the set that Netron provides, but both users say such iditions should be made with restraint.

"Some people here have math degrees and have thought up things to put in frames," Novotniak says, but only general



ized, error-free code should be

owed to become a frame.
"We say additions should be things that are unique to The Hartford," Renois adds.

Big plans for training Since February, Renois' shop has trained 20 of its 1,100 pro-CAP in pilot projects. It plans to have up to 100 of its staff memmmers and analysts to use bers trained by the end of the year, Renois says. The company has used frame technology to move an application from a VAX to a VS, and the effort "took half the amount of time we thought it would," be says.

Novotniak's shop has trai 30 programmers in CAP during 1½ years, and be says it plans to train half of its Cobol staff. Koppers is using it to develop gener al ledger, payroll, accounts pay able, inventory and sales and ons that are tai-

red to each of 13 plan "At our Georgia plant, we put un an invoice aystem — a simple system with 100 programs — in five days. We worked 16 hours a day, but we were able to go live with it a month later," Novot-

The CAP approach can be used for CICS applications because specific frames invoke amend-level

#### On June 16th, IBM announced several NEW COAX A terminal products.

#### Beehive was already shipping theirs!



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#### DSS

CONTINUED FROM PAGE 23

· Trend monitoring — tracking of sumed data time

The majority of the activity that occurs in the decision-support environme characteristically involves bulk data proing. As a consequence, the transaction processing rates that can be achieved in a decision-support processing environment do not provide a meaning-

Instead, I would recommend "active end users per million instructions per sec-ond (MIPS)" as a meaningful benchmark rion for DSS software.

An active end user is an end user that is logged on or otherwise actively pro-cessing decision-support activity. The end user may be doing a wide variety of tasks, such as specifying work to be done, analyzing results or actively causi the processor to do heavy execution. A MIPS increment is, of course, the standard hardware measure of power. Dividing the active end users by the MIPS rate minimizes the disparity of one end user community operating on an IBM 4381, and another end user community ing on an IBM 3090 Model 200. mity operat-

While, under controlled circum stances, the active end users per MIPS for a hardware or software configuration may prove to be a useful figure, there are many inequities under uncontrolled cir-

Normalize' work load For example, one of the big disparities in

the decision-support environment is in the work load being processed. One set of users is doing analysis on data bases that contain, on the average, one million records. Another set of users is doing analysis on data bases that contain, on the average, 10,000 records. Even if the algorithms used are identical, the resources consumed in the two environments will not be. Total and average data base sizes then are one variable that must be "normalized" from one environment to the next in order for active end users per MIPS to be meaningful.

Another variable that must be nor alized is the nature of the work being done by the end user. One set of end us ers is doing beavy data base proces sorting and merging several tables together. Another set of users is accessing small subsets of data selectively from a data base and doing individual analysis sed on those subsets. Even if the size of the bases of data are the same, the first

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#### ELYING ON one of the standard benchmarks for comparison may produce very biased (and, to the interested organization, incorrect) results.

set of users will use far more resources than the second. The processing between the different groups of data needs to be salized before active end users per

MIPS becomes meaningful. Still another factor that must be noralized is the nature of the processing at is occurring. One group of users is doing massive update processing, which requires a fair degree of internal control of data to maintain integrity. Another group of analysts is doing pure access

and calculation only — where no update

integrity control is required. All other factors being equal, the first group of as lysts will require many more resource than the second. It is clear, then, that there are man

variables that must be taken into according active end users per MIPS is to be a meaningful figure. One approach to normalize the work load is to create a standard work load that can be run in a number of env

There have been some benchmarks for the DSS environment that lay the foun-dation for a standard work load. These benchmarks are definitely a step in the the direction. But, strictly speaking, the schmarks are only valid for environ-

ents that mirror the benchmark. In other words, if an organi interested in DSS performance and has a work load that is not represented by one of the standard benchmarks, then relying on one of the standard benchmarks f comparison may produ

sted orga mon is a senior principal with American Manage-ent Systems in Lakewood, Colo., and an author on the subject of data have devices.

correct) results.



#### N E W Systems software

A Wang Laboratories, Inc. VS computer scries-based integrated authoring system designed for creating computer-base training courseware has been announce by BEI Corp

Combat features response analysis, case insensitivity; wild card, punctuation and blank character stripe blank character stripping; conditional ment; frame-logic GOTOs and extertranching: automatic and author-initi ated student response recording and scoring with management reporting, and two levels of book

PR ٥ D u c T 5

HERE, WHEN, OR WHY... HERE'S HOW:

BASIS TEXT IN

Software pricing is tiered and follows Wang's A, B and C CPU classifications. A as Blicense costs \$11,000. BEI, 2921 Eastlake Ave. E., Seattle Wash. 98102.

A VSAM catalog information and report-ing system for IBM and compatible mainframes has been introduced by Goal Sys-tems International, Inc.

Mastercat/VSE is said to allow users to view all VSAM catalog information on-line and create customized batch re-ports that list only the catalog information selected by the user. Mastercat/VSE's on-line facility provides VSAM catalog

data in packets, eliminating the need to MCBA, Inc.'s line of Digital Equipment search through Listost reports for information. The hatch-resorting function.

The hatch-resorting function. The 18-module accounting, distributs all VSAM information about all clusters in all catalogs, with only three control

Mastercat/VSE is available for \$3,920 der a permanent license or \$98 per onth under a three-year renewable li-

Goal Systems, 5455 North High St., Columbus, Ohio 43214.

#### Applications packages

Shop Floor Control, a module designed to control the flow of work on the factory floor by keeping track of materials, operations, labor and tools, has been added to

\$60

the 10-mount accounting, usuation of manufacturing system, which runs on all VAX computers under DEC's VMS, makes up a closed-loop Manufacturing Source Planning system.

Functions of the Shop Floor Control

module include fully customized shop or-ders; creation of shop orders by copying associated Bills of Material and Routings; set-up of repeat orders through Base Or-

der and Order Copy facilities and reports such as status and exception. The Shop Floor Control module costs om \$4,500 to \$9,000. MCBA, 425 W. Broadway, Glendale. Calif. 91204.

A turnkey login package for Unix, called Golden Key, has been released by Goldbar Computer Systems.

Golden Key is said to allow users to set up a Unix system to perform as a turnkey system. Login and password, according to the vendor, become a function of the application software. The menu-driven software also monitors certain areas of the em such as file sizes and disk fragmen-

tation to relieve the need for system ad-Golden Key knows when the terminal is turned on, sets up I/O control, handles all need functions and executes the appli-

cation assigned to that terminal.

Golden Key is priced from \$99 for oneto four-user systems to \$419 for more than 20 user systems.

ar Systems, P.O. Box 2686. 3326 Transit Ave., Sioux City, Iows 51106

#### Development tools

Cform, an application development environment said to work on microcomputers, minicomputers and mainframes with most operating systems supporting a C language compiler, has been announced by Commure Computer Services, Inc. Cform is said to use a set of visual forms-oriented applications tools. Aspects of the application are defined by cre-

sting forms and answering questions in di-alog boxes. Data bases are inferred from forms and do not have to be predefined. Other features include a data dictiory, in which all data elements are centrained, and the shifty to cross-reference data from one form with data from any

other form. Also, a programmer may write in C at any level in the development A Cform starter license costs \$295. A license including a runtime module costs \$595, and a developer license, including C

guage libraries, costs \$995 Comsure Computer Services, P.O. Box 235, Chatham, N.J. 07928.



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## MICROCOMPUTING



## Using ports in PC storm

peripherals for too few serial ports on an IBM Personal Computer or compatible. But for those who do, a handy soluti is provided by the Crosspoint The product, from Eugene,

Ore.-based Crosspoint Systems Inc., is a software-contro switch that allows a user to connect up to seven serial peripherals to a single serul port or up to six serial peripherals to two serial ports.

With the Crosspoint AB+, s user can, for example, connect a modem, a plotter, a serial mouse, a direct serial connection and a Lotus Development Corp. Signal board — all to the same personal computer — with little effort. With two serial ports on the system, two devices can

he used at the same time. Best of all, the Crosspoint AB+ easily switches any device onto any serial port with simple commands that can be issued from batch files. Switching to your modem or terminal port when starting up a communica-Continued on page 32

## PS/2 stalls New York PC plans Big Apple MIS execs wary of Micro Channel's potential bitfalls

NEW YORK - Uncertainty re garding the potential benefits and pitfalls of IBM's Personal System/2 family is causing some MIS managers here to delay said recently they are putting of such decisions until they are sure of the strategic rationale for This was one of many inter

esting findings of a survey of Manhattan-area MIS executives' purchasing plans conduct-ed by Calif.-based Computerland Corp.'s White Plains. N.Y., store during a seminar on the PS/2 aponsored by Information Management Perspective, Inc., s New Brunswick, N.J., consulting firm. The 28 respondents to the section of the Fortune 1,000 and included firms such as J. C. Pen-ney Co., Bankers Trust Co. and

Approximately 68% of the MIS executives surveyed said their business units plan to pur-chase IBM-made microcomputers over the next 12 to 18 ers over the next 12 to 10 months. Five percent said they intend to buy Compaq Computer Corp. micros, while 27% said they anticipate bringing in sys-

tems made by NCR Corp., To-shiba Corp. of Tokyo and Grid Systems Corp.

## Hercules to bulk up IRM's VGA

BY ALAN J. RYAN

In a release stated for this fall, Hercules Computer Technol-ogy, Inc. reportedly will offer a graphics board that the company recently said will enhance the Video Graphics Array (VGA) of IBM's Personal System/2, which is also fully compatible with oth er Hercules graphics modes, in cluding Ramfort, the firm's pop

ular graphics mode that is geared toward text-oriented ap-The Hercules PS/2 Card, de odels 50, 60 and 80, will not unterfere with the graphics included on the motherboard of those

units, according to Bruce Cum-mings, Hercules' executive vice-"It will be the only video card

that plugs into the PS/2 and brings the PS/2 into compatibility with the PCs that are out The board is said to enhance Continued on page 35



## OS/2 UPDATE

## Multitasking for the masses



nounced Personal System/2 and Microsoft Corp.'s MS OS/2 operating system as the next standards for personal computers is pretty much assured, judging from reactions since the un-veilings on April 2. But for the next year or two, this spring's blockbuster announce-ments will have very little effect on the daily life of the corporate PC user. In fact, one might ask. "Who needs these things, any

BY EDDY GOLDBERG

he future of IBM's recently an

The answer, of course, is MIS and mic imputer managers who want to bring mul titasking — at long last — to their installed base of Intel Corp. 80286-based, IBM Per-sonal Computer AT-class PCs without re-

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MICRO FOCUS A Better Way of Programming"

## Intel smoothes 82786 development path

BY JAMES A. MARTIN

SANTA CLARA, Calif. - Intel Corp. has d four enhancements to its 82786 graphics coprocessor that reportedly improve the speed, adaptability and design flexibility for programmers devel-oping applications for the chip.

The 82786 coprocessor features two sependent processors on one microchip for the manipulation of graphics and text and for executing multiple hardware wis-dows, Intel said. The new features include a Version Register, which reportedly will enable the chip to identify itself to soft-ware, ensuring that the software is aware

of the chip's enhanced capabilities. In addition, the enhancements: to minimize the random-access m requirements and design time for programmers and allow a single-bit monochrome image to be partially overlayed on top of a one-, two-, four- or eight-bit graphics image.

Vendors' input in desi 'We developed these fest from software vendors, who told us that

er for them to write their software," said Mark Olson, manager of Intel's graphics product line

Microsoft Corp.'s Windows, Xero Corp.'s Ventura Publisher and oth graphics-oriented systems running under Windows support the 82786 graphics co-processor, Olson said. Intel has received processor, Oson suo. Intel has received commitments from "just about everyone who writes drivers for the chip" to take advantage of the new features in their fue releases, he added.

The 82786, available now \$67.50 per unit in quantities of 10,000 and \$85 per unit in quantities of 1,000.

Separately, Olson said Intel was currently developing add-in cards to enhance the Video Graphics Array (VGA) technol-ogy built in to most of the IBM Personal

stem/2 series. "We're glad IBM put VGA on the motherboard, because we no longer have to put an Enhanced Graphics Adapter chip on an enhancement card," Oleon said. The VGA chip is compatible with the EGA chip. Graphics boards for IBM's older Personal Computer series required an EGA chip, since it did not exist on the PC

therboards Olson said there will be a strong n for graphics resolution beyond the 640-by 480- by 16-pixel resolution offered by VGA but would not elaborate on when Intel plans to release a product.

#### PC plans CONTINUED FROM PAGE 29

About one-third of those who plan to buy IBM microcomputers said they are unsure whether to purchase current-gen-eration Personal Computers or forge

ahead with the PS/2. MIS executives are still weighing the vantages of the Micro Channel bus architecture — including potential expan sion capabilities, the ease of use of IBM's OS/2 operating system and issues involvaing of end users, accor to a sampling of responses from the audi

'A strategic decision'
"Purchasing the PS/2 is a strategic deci-

sion," noted Matt Fitzsimmons, propr etor of the White Plains Computerland. "In the past, most PC equipment was ex-tremely forgiving. If you had a problem, you could always add more memory or an-other disk drive.

"With the PS/2, you have to thinl things out more carefully," be continued "Eventually, third parties will come up with new solutions. But as it stands now, if you make the wrong decision, it will be hard to live with."

Twenty-five percent of those surveyed said they intend to buy the PS/2 Model 60. The Model 50 was called the second most desirable unit; 23% of the respondents said they anticipate buying one or

Not surprisingly, the Model 30, which any observers have dubbed "the or-nan," was said to be in the purchase plans of only 1% of the audience. The Model 80 is the machine of choice of 8% of the respondents. Fourteen percent of those surveyed said they intend to pur-chase PC ATs, while only 1% said they will buy PCs or XTs.

will buy PUs or X1's.

Of the 5% who said they plan to buy Compaq micros, only 17% said they intend to purchase the Deskpro 386. Almost two-thirds of Compaq cur said they expect to buy additiona Regarding networking plans, 18 of the

firms in attendance said they have a solid strategy. Six firms said they anticipate us-ing IBM's Token-Ring, while three said hey are leaning toward networks from Novell, Inc. Eight firms reported that they have not yet decided which local area network (LAN) hardware adapter to use. Nine firms said they plan to use No-vell Netware software, while two said ect to go with IBM's LAN and

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The Networking Experts

## Vericomp rescues PS/2 users, provides EMS

BY DOUGLAS BARNEY

SCOTTS VALLEY, Calf. - Early users of the IBM Personal System/2 family have been forced to sacrafice the ability to use the Lotus/Intel/Microsoft Expand Memory Specification (EMS) mode of many popular software packages.

But Limbo, a product from Vericomp hat was announced last week, allows PS/2 access to the EMS capabilities of packages such as Lotus Development Corp.'s 1-2-3 and enables the use of memory beyond 640K bytes, according to the vendor. The \$49 product is available im-

mediately, the company said.

Limbo is said to incorporate EMS driver technology licensed from Borland International. San Diego-based Vericomp is

the first OEM for the Borland technology. the tirst Open for the potential occurrences.

The Vericomp product runs on the PS/2 Models 50 and 60 and takes advantage of IBM's Memory Expansion Option Board, a non-EMS board based on Intel Corp. 'a 80286 chip.

"Limbo turns it (the Memory Expar sion Option Board) into an EMS board, said Bill Gordon, president of Vericomp According to Spencer Leyton, vice-esident of business development at rland, EMS technology provides a way

for users to address extra memor out waiting for OS/2, the next-ger operating system jointly developed by IBM and Microsoft Corp.

Although Borland will not sell its EMS driver as a retail product, the compa-will make it available to interested corp rations no a negotiated basis, Leyton said

"A lot of people are buying PS/2s which have EMS software, and [they] want to accommodate those large 1-2-3 spreadsheets," Leyton said. "It is an opportunity for corporations to justify the rchase of new hardware technology and have a bridge to new operating sys-

#### PC storm CONTINUED FROM PAGE 29

tions program is as easily done as switch-ing to a plotter when starting your graph-

sing to a photoer when startung your graph its program.

Even initial setup is quite straightfor-ward. In fact, it is a lot easier than it ap-pears from a first read of the Crosspoint AB+ manual. The documentation pro-vides a work abeet to write down exactly what you are going to connect and what aracteristics are. (I never bothered with all that.) Once you get the idea of the thing, it is remarkably easy to set up, and ng or removing devices from the system is just as easy

it is easy to do.

Basically, you attach the supplied adapters to the 25-pin RS-232 connectors on the system's serial ports and on the peri pherals you are going to use. Eight of these are supplied with the Crossoom AB+. The two female adapters are used for the serial ports, and the remaining six male adapters go on the devices.

The adapters have RJ12 telephone-style modular sockets on them. Through these, you simply connect the serial ports and the peripherals to the Crosspoint AB + using telephone-style modu lar cables, which are also included with There is no need for the bulky, shielded RS-232 cables normally used for

serial peripheral connections The only other step in the physical setup is to run your parallel printer cable to the Crosspoint AB+. A ribbon cable runs from the AB+ to the printer, or parallel, port on the personal computer This can be a little confusing, even though

Since the AB+ simply switches de vices on the serial port and does not switch the parallel printer nort, it isn't very clear why the parallel printer gets into the act at all. In fact, when I first looked at the AB+ switch, it wasn't even clear to me whether it served as a serial port switch or parallel port switch or both. It took a little head-scratching to get it straight. In reality, however, it is out at all complicated.

The Crosspoint AB+ uses the paral lel port as a means of controlling the switch. Passing the parallel printer line through the AB+ does not affect the normal operation of the printer in any way The function of the AB+ is simply to switch devices on and off the senal port Of course, printers with a serial interface can be attached through the AB+

Software setup is also quite easy. A single program, ABPLUS.COM, is used both for initial setup and ongoing operation. A Switch Setup window is used to specify what is plugged into the eight RJ12 sockets no the AB+. Devices may be specified in terms of a specific bit/sec rate, parity and number of data and start bits. Alternatively, as in the case of variable-speed modems, devices may be de-fined as "adaptive," for which detail parameters are not specified. An

Application Setup window is then used to assign application names to particular ctions made through the switch. Priced at \$399.95, including the witch itself, adapters, cables, softwar ower supply and documentation, the AB+ is a tremendously useful device.

DATELINE: NEW YORK

## Executive confesses to computer collaboration using In-Synch!

using IN-SYNCH for the purpose of computer collaboration. This is the first public statement in what appears to be the rapid proliferation of IN-SYNCH-based co-computing throughout industry and

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ording to Merson, the compute aboration didn't stop there. The self got carried away," admittee son. But it was amazing what could do with IN-SYNCH. we could do with IN-STNCI.\*

Apparently, Mercon and his partner acts used IN-STNCI to prepare a cert used IN-STNCI to prepare a selected from the proposal they had developed. These sequenced developed. These sequenced in the proposal they had developed. These sequenced in the proposal they had been sent to be performed to the proposal they had been sent to be performed in the proposal to the pro



shows." And BY-SYNCH keeps stes" so you've got a complete trail of everything you've done gers, engineers, programmers, people—they're all going to be mputing with BY-SYNCH. I Just first. And I'll certainly do it

COMMOTATION Spreading Results of an unofficial poli tals. by this reporter show Mermon's prediction to be proving true. As inside source at MCI stated, "We IN-SYNCH all the time to analyn important revenue data. It

Cheers for Collaborators ding to a spokesman for AVTO cer of IN-SYNCH, the compan

producer of IN-SYNCH, the company will not press charges against literature. We know when we released IN-SYNCH that it was the first and only product to bring electroniseracing to the interest of the company of the company of the company of the company of the record, well, frankly we're delighted and we'd hat like in our time.



## Multitasking

FROM PAGE 29

ting to Unix or Mic ssed alternatives alread on the market. And later, when the software and applications ar 80386-based PCs, there will also he the productivity and cost benefits to be gained by bringing multiuser capabilities down to

The critical question for MIS concerns how to get from here to there with a minimum of pain. They need to protect their installed base - an estimated \$75 on invested in the current Intel chip/MS-DOS standard in apately eight million to 10 million PCs and 15,000 to 20 000 Microsoft MS-DOSbased PC software applications - without sacrificing the training and experience of their end

Further complicating the pic-re, Microsoft — which not only has the upper hand but also seems to be gaining a choke-hold on the PC software market intly announced with AT&T in February that it also will offer another standard operating sys tem for the 386; the of AT&T-approved version of Unix for 386 machines, scheduled to he available in early 1988. May

As things stand today, if corporate computer managers want multitasking for their PC users, they have five basic choices:

Play it safe and wait for MS OS/ 2 and applications to appear. Cautiously buy the new PS/2 systems from IBM as they arrive and he a willing pioneer by switching early to MS OS/2. Use existing networks or in stall new ones to link persons

 Use a Unix or Xenix platform to run current DOS application as tasks running under the non-IBM operating system.

The preceding solutions are relatively inexpensive and exist oday for 286 and 386 ma y IBM's announced 3270 Workstation Program, which is scheduled for a summer release. It promises multitasking with mainframe access by emulating pany's Token-Ring network without an IBM 3278 or 3279

daster. It will work on existing PCa and most of the PS/2 series. vever, MIS and PC ma agers need to ask several funda mental questions before en barking on the uncertain and complicated road to multitasking. Are the implied gains worth the growing pains? Yes, if you think about the advantages that king can bring to the Are end users really knocking

down MIS's door asking for mul-titatking? On the whole, no. The The average corporate user is not familiar with the ad-vantages of multitasking and

That the market offers grond IBM and Microsoft, the being reported in the ess is generated primarily by developers and PC ne makers. They are scram-ng to chart a new course on the still-undefined PC seas, which were thrown into turmoil



E'RE just stepping back and waiting a little while for some of these things to get a little bit clearer

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by the IBM-Microsoft tidal wave. In their haste to formulate public positions, these vendors are creating many secondary waves of their own as they struggle to survive and stake their m on future market s

From the corporate PC buyer's point of view, the only clear outcome from the recent flood of usual marketplace result: watch-ing and waiting. Without a doubt, it's all very interesting for MIS and micro managers to keep score as the contending vendors engage in their own brand of restlemania, but corporate ers are waiting to see who's left in the ring when the bodies stoo flying At the Man etta Motosi

Life Insurance Co. in Springfield, an attitude of active neutrality "We're just stepping ick and waiting a little while for some of these things to get a lit-tle bit clearer," says Executive Vice-President John Pajak.
"That has to be the strategic direction we take at this point. I saidn't say that we're in a holding [position], in the sense that we're standing by and doing nothing we're in an evaluation assessing position

George DiNardo, és vice-president and chief of the Information Management and Research Department at Melion Bank NA in Pittsburgh, sums up buyer frustration. "Are you going to make a major com to anything, including IBM

when you have all this connects tion going on? No. [The user has] a box that does what he needs. Why would I buy another? I'm sust going to let the projectiles fly from one enemy camp to the other one and watch them go back and forth," he says. It appears, then, that the new IBM and Microsoft products are

bound to be important, but not yet — at least in terms of corporate buying activity. In fact, there really isn't much to buy right now. According to Micro-soft's delivery schedule, it will be quite a while before applications stilling the new capabilities of MS OS/2 are in the hands of the end user. The following is Micro-

May 1987: The MS OS/2 Software Development Kit shipped to software developers with a beta-test release version of the MS OS/2 system kernel, develnent languages and tools, plus medifications for the Presentan Manager and MS OS/2 LAN

August 1987: The MS OS/2 estation Manager ships to opers as an update to the her 1987: The MS OS 2 kernel ships to OEMs; phased use begins. Meeting this tar-

et date depends on developers' reflack after the release of the ist. If history is a teacher, this Fourth-quarter 1987: The MS OS/2 LAN Manager is released to developers - as up-dates to the MS OS/2 Software velopment Kit - and OEMs.

Another piece to integrate.
First-quarter 1988: The MS
OS/2 kernel is shipped to end users. This, as Microsoft product literature attests, is only antici Date uncertain: The delivery date for the extended version of

OS/2 will not even be announced until the fourth quarter of this year. That is six to eight months before the folks at Microsoft and IBM are even willing to predict a invery date So what is the bottom line? It will be mid-1988 or beyond be-

fore applications utilizing the multitasking capabilities of MS OS/2 appear in users' hands More complex applications, m rporating the eer and LAN Manag he as far away as early Early buyers of IBM's PC

ATs now considering the PS/2 line would do well to recall the ed promises for a multitas ing MS-DOS when the first ATa reiled. Remember MS DOS 5.0, also known as Ad-vanced DOS? Those early buyers

HE DELIVERY DATE for the extended version of OS/2 will not even be announced until the fourth quarter of this year. That's six to eight months before the folks at Microsoft and IBM are willing to predict a delivery date.

are still waiting. So why should they buy PS/2 systems now? Granted, the 286-based ATclass machines offer users great er speed, but are the price/p ce gains of the PS/2

eth the risk of earl At The Travelers Corp. in Hartford, Conn., Senior Vice-President Joseph Brooky looks out onto a sea of 20,000 PC users. He says he, too, is frustrat

with how long it will take for MS OS/2 to arrive in a useful fore soft's most recent delivery but that he looks forward to its lexine featural We wish it were here today

because we could apply it, but we have to wait. We think it has a lot of promise for multitasking. Brophy, who cites many pernal uses for multitasking, says.

he is "glad they made the an nent, and the sooner we pet it, the better Nevertheless, what to do with the millions of PCs already in use is a thorny issue. Brophy acknowledges. "In terms of up-

grading and protecting invest ments, that as difficult question It depends on where people are

RE YOU

a major

anything, including

IBM, when you have all

this competition going

commitment to

going to make

CEORGE DINAPPO

He says he ordered it "sust t have something to play (with) and see what it does and see what the implications on the current and the new operating sys-Nevertheless, DiNardo ac-

nowledges a future importance of PS/2 and OS/2 and says that what is important to him now it to get ready for their arrival Listen it enhances all of our caties, and when it happens. "Ildoit," he says.

In order to give his 700 PC users a chance to trade in thes old computers for the new IBM systems, following IBM's April announcement, DiNardo opened up a used computer store at the bank. Contrary to his expecta tions, the response was under-whelting. "Everybody could have sent down their old boxes," he explains. "And I figured, 'Oh boy, there's gonza be a mad crescendo of movement to the new house, best In one month I have not gotten one application for a turn-in. I did not get one box turned in. That's out of

His explanation is that the current generation of PCs and applications, already does the mbs his users require "People are getting disinterested," he says. He also mentions the complications of going beyond the single-user box, including networking, mainframe access and how other PC users can ac cess each other's data bases Another difficult choice for MIS and micro managers is de ciding which applications should run under the current versions of MS-DOS and which should be er the current vers rewritten to take advantage of

the greater capabilities of MS OSM According to Microsoft 'MS OS/2 can run most existing applications designed for MS-DOS," Which applications will not run, and in what ways, is still an open question.

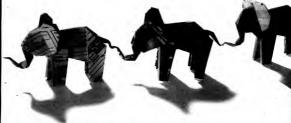
There's really a whole new architecture evolving in how you use computing in a knowledge work environment, elers' Brooky says. The old time-sharing, where

MELLON BANK NA the host controls everything is finally going to give way to an enment where the personal opic on the IBM PC XT and computer on your desk - or basic PC have a problem, bemainframe on your desk - real cause there is some incompatily is the controlling node that bility there. If you're on the AT controls all the resources. But - and we've been buying only you've got to understand that ATs in the last year or so - you We're struggling to understand how to do it. You evolve into it. Brophy says.

do have some upward compati-bility," he says. At Melion Bank, DiNardo o in his company's first order in Goldberg as bron-lance writer based in early May - for one PS/2 box



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System 85 can centralize and simplify these and other administrative tasks.

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#### Tool brings CPU strengths to batch language

BY JAMES A. MARTIN

DANBURY, Conn. - VM Peronal Computing, Inc. recently announced an IBM Personal Committee software development tool package that report-edly brings mainframe canabili-

Hercules

FROM PAGE 29 tus Development Corp.'s 1-2-3 Release 2 and Symphony Ver-sion 1.1° as well as Microsoft Corp.'s Word using software drivers developed by Hercules.

mings outlined three opportun ties for graphics for the PS/2 family. One, be said, is develop-ing an Enhanced Graphics Adapter (EGA) card with 640by 480-pixel resolution for "per sonal computer classics." He said this "me-too" approach works by activating the 640- by 480-pixel mode already present on existing EGA chips.

nings predicted "me-too" graphics cards will be designed by many board makers, including Hercules, "We'll have a board, and so will every other company. That's called assignhe said.

The second opportunity, Cummings said, is creating a card that will emulate the PS/2's VGA for "PC classics," which in-volves plugging a card into a personal computer to bring it into compatibility with the PS/2. To do this, he said, the ma er would have to clone the full range of graphics and text capabilities on the PS/2 motherboard. Emulation would be questionable, be claimed, and with a \$595 version already announced by IBM, there is not much need

for this product. Commings said his company is not pursuing option No. 2 yet. "Emulating the PS/2's VGA for PC classics is a bad idea for us, he said. "We can't do anything better in that area - at least not yet - so we say, 'Buy IBM.

The third option Cummings outlined is the VGA enhancement and compatibility with existing "PC classic" standards, the Hercules PS/2. The card, he said, would improve spread sheets and word processors and uld offer higher resolution graphics for more software

Our first inclination after the introduction of the PS/2 was. 'Stay with what's out there — IBM Personal Computer ATs, XTs and clones 'However, some of our corporate customers are going for the PS/2s and have ed us if we will make a card for them. We're moving it up on our production schedule," Cumitor and screen manager into a integrated IBM PC- and Mi-osoft Corp. MS-DOS batch-The package, Beyond Bat, is sed on the vendor's script lan-age, which VM Personal Comng said also serves as the

ay customers were using its script language to automate procedures not related to communi-cations," President Robert Mill-stein said. "That gave us the idea to make a product using the

less and be better integrated with the operating system." Beyond Bat is said to allow de velopers to create or comb

existing applications using fea-tures not available in the DOS batch language. "The product

offers developers a group of tools they were used to in the mainframe world, such as a panel sager, editor and script lan - things that haven't been convenient or integrated before on the microcomputer level," Millstein said. Possible obcations also include design

The product retails for \$99 and is available now



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65 MS hard drive The Turbo EGA Color System

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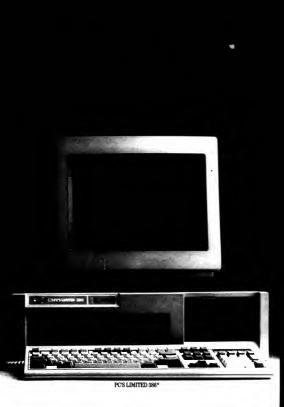
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both Tandem host applications and UNIX applications, as well as other hosts through SNA or X.25. **TANDEM**COMPUTERS You can connect PCs to LXN through Ethernet LANs.



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#### Systems

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packages

pphire, a system said to allow IBM Personal Computers and compatibles to capture and store ASCII streamed data while operating under emulation as an IBM System/34, 36 or 38 workstation, has been announced by Dynamic Com-munication, Inc.

According to the vendor, the Sapphire workstation receives, archives and trans-fers incoming ASCII file records to an EBCDIC host file. Incoming data may be passed to the PC's asynchronous commu-

nications port via an external modem or an RS-232C cable Sapphire is said to enable the user to perform certain IBM PC-DOS-based functions. Including software, emulation rd, asynchronous comm ard and serial clock and emui fer utility, Sapphire costs from \$2,000

Remote polling-site versions begin at mic Communication, Suite 700, 711 Levden St., Denver, Colo, 80220.

#### Software applications

A financial analysis software product that combines spreadsheet, modeling and data base functions has been introduced by Javelin Software Corp.

Javelin Plus performs budgeting, forecasting, consolidating and reporting functions as well as data handling functions. Users can enter text or dates anyber. Dates ere they can enter a our can be used in formulas as well, the vendor said. Data base functions allow the user to select or sort records in a list as part of a model. The software is also said to offer cross-tabulation functions Javelin Plus is priced at \$249.95.

Javelin Software, Building 200, One endall Sq., Cambridge, Mass. 02139.

#### Software utilities

Software said to add to Lotus Develop-ment Corp.'s 1-2-3 and Symphony work sheets, allowing users to find optimal val-ues for defined variables, has been introced by Enfin Software Corp

Optimal Solutions is the se module of Enfin's Decision Support Solu-tion series. Features include a full-screen form window for problem setup and viewing of results; a built-in display and "what-il" shell for scenario building; display and calculation of shadow prices, reduced costs and slack values in a form window; allowance for variables to be real numbers or of type zero/one; a vector product k to minimize entry of long formulas; the ability to call Optimal Solutions from Lo-tus macros; an indexed Help screen; and a

Lotus-style user interface. Optimal Solutions costs \$99.95. Enfin, Suite 106-A, 6920 Miras Road, San Diego, Calif. 92121.

#### Printers/Piatters/ Peripherals

The PC Publisher Kit, softwa le users of Hewlett-Packard Co.'s

Laserjet and compatible printers with desktop publishing features, has been an-nounced by Imagen Corp. The PC Publisher Kit is based on Ima-

gen'a document description language. It uses raster-image processor technology and provides such features as full-page graphics and font scaling capabilities. It works with IBM Personal Computer XTs. ATs and compatibles and comes with a base set of 18 typefaces.

The PC Publisher Kit is priced at ¢1 805 Imagen, P.O. Box 58101, 2650 San Tomas Expwy., Santa Clara, Calif.

#### 95052 Board-level devices

Univision Technologies, Inc. has an-

nounced the UDC-800 series image display controller.

The 2,048- by 1,536-pixel by 8-bit controller is a single IBM Personal Computer AT-compatible card. The UDC-800

series is said to support 60Hz noninter-laced monitors. It features 3M bytes of dusi-ported memory, up to 512K bytes of hisplay-list memory and video random-ac-

rc, circle, fast-bit block copies and text. It comes with initialization and diagnos tics software and supports Microsoft

The UDC-800 image display controller costs \$6,995 a Tech 12 Can Univision Technologies, 12 bridge St., Burlington, Mass. 01803.

Interaction Systems, Inc. has an nounced the Model 4003 Touch Controller board for IRM Personal Comput-

The plug-m touch controller board is said to add capacitive touch-input capabil ity to the PC. The user is able to input and acress data via touch when the 4003 board is inserted into an IBM bus slot, a standard Interaction Systems touch een is attached to the monitor and the touch screen is connected to the control ler via a single cable. The Model 4003 fea tures standard scaled resolution of 256 by 256 pixels, skew compensation and write

The Model 4003 is priced from \$295. Interaction Systems, 130 Lincoln St. Brighton, Mass. 02135



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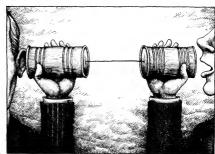
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#### NETWORKING



Elisabeth Horwitt Why fear baby Bells?

Maybe it's a holdover from pre divestiture days when Ma Bell and her seven kids were our nt and omnipresent, but I am giving a lot of trouble understanding why everyone assur that once U.S District Judge Harold Greene lets them loose, the regional Bell holding comes will run amok in every ss sector from financial services to pay telephones. Granted, there is truth in the complaints that have arisen from competitors whose turf is being actively threatened by the

Bells. For example, in March, Bell Atlantic Corp. filed for a tariff to sell storage facilities for services that play the same message to everyone who calls a given number. Not only do Beil Atlantic's operating compr have built-in credibility in bility in such a market, but the holding compacture in which its o enhanced service would charge mers lower telephone rates. A little pressure from competitors made Bell Atlantic

hack down Another ex e of a co ny with a right to gripe is MCI Communications Corp., which sees Nynex Corp. as a threat to its current thrust into the inter market. Nynex first purchased Continued on page 46

#### 3Com fills out software plans

Users will get windowing, corporatewide links; product blitz set for '88

BY PATRICIA KEEFE

SANTA CLARA, Calif. - A recently released paper detailing 3Com Corp.'s software direction for the next three years and beyoud focuses heavily on plans to

tie 3Com users into corporatemide systems Users can expect to see 3Com expand its current work group-oriented product offerings to include connectivity to IBM's Systems Network Architecture, Digital Equipment Corp.'s Decnet, Unix and the Transmission Control Protocol/ Internet Protocol, as well as ad-

vanced network management and the ability to run multiple

protocols on 3Com's inte

apters, according to the paper. Some of these products are ed computing and event auditted to be announced as part of 10-product blitz planned for a 10-prod 1988, according to 3Com, in-clude the following:

In 1988, 3Com said it plans to m 3-900, 3-00m sate it plaint to tackle a number of areas by inte-grating Microsoft Corp. 3 OS/2 LAN Manager into 3-00m a 3+ network operating system. The merged product reportedly will be called 3-0 Open. 3+Open will continue to sup-

3+Open will continue to sup-port both protected-mode IBM os support and IEEE 802.2 to protect existing applical reiopment and existing 3+

 Mainframe access. 3Com will networks, 3Com said. 3+Open will also provide the use applications built on the Data Link Control/Logical Link Conserver and station sides with minicomputer-like functions. trol interfaces provided with with 3 + and will offer gateways.

#### Pronet-10 beefed up, price cut

BY PATRICIA KEEFE

WESTBORO, Mass. - Pro teon, Inc. last week enhanced its Proper-10 10M hit/sec tokenring network with network man agement software and an IBM

nounced some price cuts. The Tokennew-10 advan network management software features performance analysis configuration management and network troubleshooting from a single, centrally located station Proteon offers the same man-

agement services for its Pronet 4. a 4M bit/sec. token-ring net-

Proteon said it will introduce Tokenview-10, which is not offered on the Micro Channel interface, in three phases.

Phase 1, set to be available in September, will reportedly indata collection and statistical analysis functions to assist network administrators in isolating notestial problems on the network. Phase 2, to be availa ble in December and upgradable from

Phase 1, is said to add automated With the introduction Phase 3 in the first quarter of 1988, Tokenview-10 will handle Continued on page 48

 Novell develops bridge to connect remote LANs, PCs to local LANs. Page 50.
 CXI rolls out five LAN workstation packages for PCs, PS/2s. Page 50.

#### Data View



OF CHAPT MINISTER I SHAPE

#### Prudential takes to sky Satellite network

Other projects slat

• 3+Windows. A fully graphics— — indow interface will

eliminate the need for users to know command-line directions.

Network management, 3Com will focus on monitoring, con-

trolling and administering the

network using graphics displays,

test tools, ad

replaces leased lines

BY DAVID BRIGHT

NEW YORK - Prodestul-Bache Securities, Inc. hopes to obtain faster, cheaper and more converting from a terrestrial ed-line network to a satel-

lite-based system, company officials recently said Tridom Corp. in Atlanta will ent a network of its own very small-aperture terminals (VSAT) - small satel-

lite dishes that operate over the Ku-band frequency. The Clear-link nodes, which are slated to be at more than 300 Continued on page 48

#### Warning: Bargains can be hazardous to your network. Some people feel that

price is the only thing that ers when it comes to moderns. Our customers feel differently. If you also feel that ty, support and company stab are just as important as price, we offer you our 2400/1200 bos

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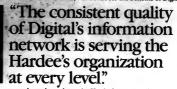
IULY 20, 1987

COMPUTERWORLD

# )1gital 12 **110W**

Ror Hardee's", the nation's third most popular hamburger chain with over 2700 restaurants, instant access to information has become an essential ingredient in their succes. "We give our managers the power of centralized computing in their own decentralized environments," points out Bill Burd, vice president of Management Information Services. "With Digital's innovative approach to networking information, our managers get a better handle on day-to-day operations. And they're delighted because they spend less time on paperwork, more on personal services."

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communications resources throughout the entire Hardee's organization. "Our ability to share timely, accurate information produces results not just at the counter where the food is served, but at the district manager level and at corporate headquarters. Tighter control over company operations gives us an edge in our highly competitive market. We are able to deliver a higher quality product with greater efficiency."

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digital

#### Baby Bells FROM PAGE 43

ntrolling stock in a company that is developing fiber-optic links across the Atlantic Ocean en applied to Greene for a waiver so that it could start to offer a link between the U.S. and Europe, MCI quite correctly d out that Nynex would

have a built-in advantage in the market, since it controls localloop traffic in New York firms and a termination point for a lot of transatiantic cable

the danger posed by the dereg way to stifle potential new com-These valid concerns justify he caution with which both the Federal Communications Commission and Greene are viewing

netition on their turi For instance, AT&T claims that letting the Bell operating change business will cancel out all of the gains wrought by di-

> effectively communicate with your host computer, your data com

same, that one or more of the rating companies could dup cate predivested AT&T's near-monopoly in both long-distance

nd local telephone services. Think about it. AT&T which has been clobbering MCI and U.S. Sprint Commun. ns Co. — is depicting the Bell operating companies, which would have to acquire or build

scratch, as the potential new Godzillas of the long-distance

Perhaps the most far

fetched case against the operat-ing companies that I have heard to date is from a representative of a Fortune 500 fi allows the regional holding companies to enter the informa tion services market, they'll have a field day in the financia two reasons. One, they could sell rs at cost; and two, they cess" to the telephone compa nies' data bases, which they could then use for demographic

f find it hard to picture emancipated holding companie running roughshod over the likes of Chemical Bank or Citicorp. They would have to build the expertise and the staffs from ground zero, and the FCC and Greene have been on the watch against cross-subsidization and unfair pricing ever since divesti

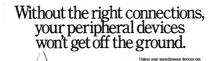
A lesson learned Nor does past history sup the premise that the operating companies will run amok in new markets. During the first year or two after divestiture, several companies showed a disconcerting tendency to purchase com-puter stores and software firm and to market themselves as "full-service systems integra tors." But they learned the same lesson AT&T learned from trying to sell computers - run-ning a regulated monopoly does not necessarily prepare you for competing in an unregulated,

Perhaps their past experi-ences have made the holding companies more cagey. Right now, while they lobby Greene to lift his restrictions on information services, many of them are busy trimming organizational fat and performing user surveys to determine market demand for various types of basic and en-

have to buy most of your exper

This seems like a far better strategy night now than penger ing the FCC with new tariffs. As one consultant pointed out recently, the regional holding companies need to identify mar kets that will make use of their sources and expertise. Right now, they are still too commu cations-oriented, trying to sell plain vanilla transport when they should be selling applications. Until they do, they won't be electrifying many new mar kets; and consumers, if no ers, if not co petitors, may be the poorer for their sheence

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You may get a convincing song and dance, but underneath it's a different story. Behind those pat answers that software vendor is actually sweating and squirming.

Why don't they want you to see complete in 28 Single. They know that their size and name familiarity do not guarantee happiness. Many "Single source" or "alt-hings-to-all-people" and people in such a specific product product in the people or multi-application product line. They know that their customers list may contain a good number of less-than-happy clients. It's difficult for these vendors to commit the human and monetary productions to contain the human and monetary products to contain the human and monetary products and the size of th

Data Design develops mainframe financial applications software. Period. We understand all our users' requirements and the therefore able to provide the necessary support: over 40 percent of our support and installation staff are CPAs or have MBAs.

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#### Prudential

CONTINUED FROM PAGE 43

tial-Bache branch offices in the U.S, will communicate with a Ku-band hub station from GTE Spacenet Corp. in McLean, Va. GTE Spacenet says at will supply the transponder bandwidth on its Gstar satellite. The company is also providing network monitoring and manage nent services and field maintenance of

premises equipment.

Currently, Prudential-Bache says at least 20 branch offices are using the satel fite network on a full-time basis, with the is, with the maining branches scheduled to be added by December. The network is expected to reduce the firm's data communica-

tions costs by as much as 40%, cut response times by 20% or more, reduce downtime by at least half and more than uble capacity. Reliability became a key issue for Prodential-Bache when branch offices began

relying solely on computer-based comm nications with the central office, accord-ing to William T. Rush Jr., vice-president of telecommunications. "The account executive no longer has the paper backup be used to have. All of a sudden, the reliabil-

ity that was great a couple of years ago is no longer acceptable." Rush says the sheer complexity of the company's terrestrial system, which in-volves more than 100 multidrop lines, allows too much room for human error. For every central office these lines go

through, you have human beings [respon-sible for maintaining lines]. Human beings have a notential for making mistakes

Previously, an average of 2% of the strial network was down at any one time, Rush says. But he projects that the satellite network will be down "signifcantly less than 1%" of the time when

fully implemented Another major benefit of the satellite mentation is the ability to quickly reconfigure the network for new applications. According to Rush, even fine-tuning a terrestrial network can be a "horrendous" experience, while many changes on a satellite network can be accomplished overnight via software alter-ations. He notes that Prudential-Bache once spent a year changing the way the branches were being fed data. The use of Tridom's 1.8-meter dish.

which is larger than many VSAT termi-nals, should minimize weather-related problems that sometimes plague satellite networks, Rush claims. "Also, if the signal drops out, our autodial backup facili natically steps in.

Another potential trouble spot is the essibility of security breaches, especially nce Prudential-Bache will be sharing a GTE Spacenet hub with other firms. But Rush says the network includes security veis such as complex polyno rithms and traditional passwords, ma

it "very, very difficult to crack."

Prudential-Bache had originally in-tended just to add reliability, case of deployment and other improvements to its existing terrestrial networking system, "the key [terrestrial network] vendors said. You can't do much more than what you have right now," so we cast our net a little wider, "Rush explains.

#### 3Com plans CONTINUED FROM PAGE 43

CCITT X.25 routing, CCITT X.400 access and Integrated Services Digital Network interfaces. 3Com said it expects to support the full Open Systems Intercon-nect model at the multivendor Enterprise Event scheduled for June 1988, allowing

direct access to minicomputer systems. 3Com said it will focus more strongly on Unix in 1989. "Unix stations are likely to be the newest workstation of choice for business desktops, and 3+ will allow for the integration of these high-powered de-vices," 3Com said. Specifically, FTAM and NFS server protocols will be added to Microsoft's Server Message Block server protocols, allowing users to select the appropriate protocol

Also slated for 1989 are limited use of artificial intelligence and network-intrin-sic applications such as scheduling, track-ing and calendaring as port of 3Com's basic system offerings. In addition, multimedia integration will be provided for all workstations through voice storeand-forward, voice-annotated text, high resolution graphics and facsimile caps

#### Pronet-10 CONTINUED FROM PAGE 43

all network performance, configuration management and troubleshooting activi-ties automatically, Proteon said. Phase 3 is said to enable Network administrators to perform problem determination and error recovery via the network management system to minimize network downtime. Pricing is not yet available.

Proteon also announced a high-speed terface card for IBM's Micro Channel architecture that it said will provide a di-rect connection to IBM's Personal System/2 Models 50, 60 and 80. Proteon said the PS/2 Model 30 is already supported by the Pronet-10 P1303 interface for IBM Personal Computer ATs. The new card should be available in November.

Proteon also announced it has reduced the cost of its P1300 IBM PC and P1303 IBM PC AT Pronet-10 interface cards by more than 30%. The P1300 card now costs \$545, and the P1303 costs \$595.

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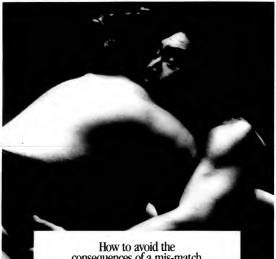
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Product Chart A detailed guide to microcomputer accounting soft-ware. Page S11.

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Cover illustration: John Alfred Dom III

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Managing by numbers is becaming easier with advances in accounting software's data exchange and reporting capabilities.

### IBERS GAIN EW MEANING



ost people regard accounting as a necessary evil, an exer-cise that must be performed to satisfy the Internal Revenue Service and ensure the business is still afloat. By the same token, accounting software is considered a tool of the most mundane sort. That attitude is both unfortunate and misguided because changes are taking place in accounting software that promise to transform accounting from a bean-counting function into an

integral part of management information. The emphasis is shifting from using numbers strictly to control finances to ustheoretical data or assumptions about future
ing them to communicate information about the
events and then the projection of various possible totality of an enterprise

Accounting software programs are beginning to take on attributes normally associated with fi-nancial modeling packages and other manage-ment information systems. This new orientation can be seen very clearly in the number of programs that now offer custom report gener

the most basic form of communication. It wasn't very long ago that purchasing an ac-counting package meant learning to live with a limited menu of standard reports that could not be modified or augmented. Now, even the least expensive software packages offer users the abi

ity to custom-design reports for their particular Another even more obvious change is found in the number of accounting programs that currently offer some sort of graphics analysis of informa-tion in the accounting files. Graphs used to be available only on spreadsheets or modeling pro-

grams, but many accounting programs now offer raphic presentation of elements such as ratio rends and cash flow. In some cases, accounting grams have even ventured into the territory what-if analysis, which allows the entry of

Callet Farmers' Cooperative Co. in Callet, Vt., and heads his own consulting firm. Detack, in Montaelier, Vt.

outcomes. This type of activity has been almost the sole domain of modeling programs in the past and is the most recent breakthrough in some ac-

counting programs.

Two trends just taking shape that bode well for the future are single-file and data-based acunting systems.

Most accounting software is file based, mean-

ing the information for accounts payable is in an accounts payable file, the payroll information is in a payroll file, the receivables information is in a receivables file and so forth.

The problem with this approach is that, because each file has its own unique structure, records from one file cannot be easily joined with records from another. If a user wants something more than predefined reports, he has to repro-

gram the system.

Some actiware farms are addressing this prob-lem by adding report writers to their libraries.

MCBA, Inc. and Great Plains Software, Inc. have released report writers that allow the user to custom-design reports by drawing data from more than one file in the system. While this approach offers a quick and easy solution to the problem, an even more exciting development is the recent entry into the market of single-file or unified-file ac-

counting systems. If you view accounting as a series of

#### Numbers

FROM PREVIOUS PAGE nsactions that take place ow e, then the unified-file syste

begins to make sense. What the concept says is that all the acinting transactions can be nouter then sorts out what is d and the form in which it is ded. The result is a system in

Unified-file accounting systems do not recognize the nor-mal close concept. The system is up all the time and does not have to be formally closed, except when you wish to remove historical data for archival purposes. For practical purposes, though, you can close the books any time you want, simply by specifying the time period you

Quickslice approach Newviews, a highly touted ac-counting package from Q. W. Page Associates, Inc., uses this approach very effectively.

The program offers the user a ually familiar approach to acng. The screen looks very much like a ledger sheet. You can look at an item on the ledger and then quickly move to the next level of detail to see the component parts. Repetitive use of the function that Q. W. Page calls Document Expand will, in act, allow the user to get to the heart of the accounting system ere the individual transac

For example, the accounts repervable item on the balance beet is made up of various ac-

ITH one file. Newviews gives you a total accounting system, because it allows complete flexibility in designing reports and viewing data.

counts for firms that owe you company money. The account for each firm is composed of invoices and navments and each myoice is made up of individual items for which you have arged the company.
With one file, Newviews gives ou a total accounting system,

cause it allows complete flexibility in designing reports and viewing data. You design all reports and views for your system from scratch. Each sheet reoures definitions concerning which accounts get summarined into the totals being viewed.

Also, Newviews goes against the grain of traditional accounting software by suggesting the use of mnemonics rather than account numbers to identify accounts. Thus ACME Manufac-turing becomes customer ACME rather than customer No. 1299. While easier to under stand and remember, maremon ics are slower to use during data

entry than the num Newviews' visual approach to accounting is appealing, but its flexibility demands an investment from the user. Designing a large or complex system can be us, and just learning to work with the software requ a fair amount of practice and ef-

Another unified-file program with a more traditional interface in Keystone from Keystone Soft-

HE development of unifiedfile systems on microcomputers auture development of similar accounting systems for larger

vare. Keystone is a fast, bomb proof program that offers the same flexibility as Newviews with some additional features. Recognizing that most of accounting is data entry the desamers of Keystone made the program as fast as possible in

computers.

this crucial area Keystone is also about as crash-resistant a program as you are likely to find. Data is written to disk as you enter it, so pulling the plug on the system has essentially no impact on your files. You simply plug it back in and start working where you left of Newviews requires a more

graceful exit, however, and will crash if you do not use the proper exit procedures. Keystone uses indexes to link general-ledger accounts to sub-accounts, which are the banks,

customers, vendors and others with whom you do bust General accounts are the traditional accounts found on a com y'a financial statements. These indexes can be used any time you wish to create direct relationships between the detail and general levels. Once grasped, the concept behind the system is beautiful in its simplic-

ity and is a perfect supporter of tion-based system What is most exciting is that the development of unified-file systems on microcomputers ausimilar accounting systems for larger computers. The advent of larger, faster systems with in-

creasingly more storage makes unified-file accounting even more plausible. The speed and storage capacities of mainframes es this concept a natural and Continued on base SS

#### Forecasting financial futures with models

in recording history, then modeling programs are the specialists A financial model allows a over to simulate how a hypiness works or might work, extracting instructive trends from the past and combining past performance with variables for forecasting.

Unlike spreadsheets, which offer the most basic form of modeling, or accounting programs true modeling packages, of which there are perhaps 20 to 25 on the market, are designed with one application in mind: To create well-documented models. Modeling programs such as relin Software Corp.'s Javelin and Encore from Ferox Micor-

systems, Inc. use descriptive variables to hold data and permit multiple manipulations with the same data set. Data is kept sensrate from the matrix in which it

#### Data exchange The best of both worlds is to

eling program and an accounting program that can trade data easily. You can then extract historical data from the nting system, mad in the model and even put it back into the accounting software.

opers have been sensitive to this need to share information, and most modeling programs, as well as many of the newer accounting systems, offer data import and IFPS from Execucom Sys tems Corp. is a modeling pro-gram that offers a useful data

sharing feature. Available in mainérame as well as microcomputer versions, each has a built-in communications protocol that makes the movement of models from system to system transpar est to the user. This frees the host system from supporting many people working on models while keeping mainframe avenues open for the extra large models or those that require acware and data.

One of the beauties of s modeling programs is that they are nonprocedural; thus, you can define your model in any order and it will execute proper Javelin is a good example of such software. This program uses a single file to hold data and

the model, so you can set up any number of views that you wish. Once relationships are estab-lished, it makes no difference in what order they are displayed, as the answers will still be correct Once you get over the shock of ng conprocedurally the Javelin approach is refreshingly

If there is a drawback to the Javelin approach, it is that the entire model remains in one file This does not pose much of a lim-

I his does not pose much or a tim-it with Javelin's napport of the Expanded Memory Specification (EMS) and enhanced EMS sys-tems now available. Models of 2M, 3M, 4M bytes or more are esible. The problem is that the ta and the model logic are in one file, and several models cannot share the same data easily. Encore solves this by keepi the data and the model in com-pletely senarate files. Severi models can use the same set of data, or several data sets can be used by one model. It is a my milie way of working with large models.

Encore is a procedural sys-tem, however, so model design in

more important. The model executes from the top down and will fail if it encounters a statement that needs information from a variable that is not yet defined

Modeling programs are used routinely by businesses to fore-cast and analyze cash flow, sales and expenses. Models are not limited to just these routine ap-

ds to simulate various occ ncy rates in cond to evaluate various tax implica-tions of their building and sales strategies. Bankers use mode to review financial statemen seeking loans. In fact, the bank's a model created by a business models testing models, as it were. Accountants use models to assist in planning tax strate-gies for their clients. Businesses

use models to analyze new prod uct introductions, especially those in which large capital out ys are required. Models can also be used in science, agriculture and almost any endeavor in which numbers are ed to analyze or predict What sets modeling program art from accounting software

They allow more freedom of expression. Whereas modeling ograms are designed to en-urage you to tinker with the data, accounting programs are signed primarily to prevent authorized tinkering with it. lodeling software generally ermits "on-the-fly" changes in data and allows numer anges to similar data seta. Ac ng software is not de nigned for this type of free ex-

deling programs usually offer an extensive graphics rep ertoire. In most modeling situa-tions, you would want to identify and deal with the data at the ro rather than the micro lev el. Graphs allow you to spot mi cro anomalies quickly, freeing you to concentrate on the under-

Since experience tends to reest itself, modeling graphs also make it easy to spot trends from historical data and carry them forward into the future. If the trend varies remarkably from the historical pattern, there should be a good reason why.

Modeling software normally
has excellent report-writing capublishes designed for externa reporting. They often contribut to the development of a formal presentation, whether on a new

roduct or on last year's sales. The unique language of mo ing programs could be called a programming language, but it is actually a control language that often resembles English. This language is easy to use; it is what drives the data gathering and re-porting functions of a model. Using the control language

models can be put together to prompt user input and then offer mus of options. An inexperi enced user can be made produc tive through the use of menus

ODELS can also be used in science, agriculture and almost any endeavor in which numbers are used to analyze or predict.

and Help screens, and the company can rest secure knowing that the model logic being used is sted and bug-free.

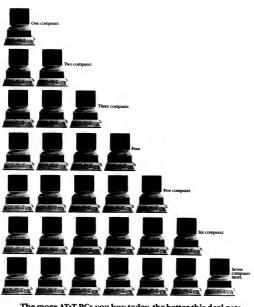
This feature of modeling soft-ware is especially helpful in large companies where the MIS de-partment writes the models and hen distributes them to the departments needing them. The ow the model works, just what to put into it.

Modeling programs lend

emselves very well to the personal computer environment, in which the general rule mandates one user on the system at a time. This allows the model user to work with data from the host but frees the host machine of the port tasks associated with is running on larger systems. This can extend host aystem resources. It also means the model user gets instant re-sponse, something often lacking the host environment. Modeling programs do not of fer crystal ball glimoses into the

future, but they do permit a logi cal study of the past and encour age creative study of the possi

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#### Wooed by the frills, won by the basics

BY BECKY BATCHA

or one of Canada's largest con-lomerates, an initial attraction to the finshier aspects of micro-omputer financial software ing, "what-if" analyses, ics and the like — has ened into a dependence more substantive than origi envisioned. George We Ltd., a broadly based comp with interests in food produ eries and the forestry ind try, now relies on its personal computer package as the corner-stone of its financial reporting

orge Weston, which re-d sales of \$10 billion (Camacornon states of \$10 bitton (Canadian) last year, began using Ferox Microsystems, Inc.'s Encore financial modeling package in its corporate headquarters in 1983. According to Geod? Flood, information rmation systems officer at Toronto-based firm, early

users tapped mainly into the package's planning and forecast-ing features.

about the modeling and analysis capabilities of the program," Flood says. Analysts at the corporate level manipulated finan-cial data to gain better perspec-tive on the corporation's direc-tion. In the process of pursuing discovered the general efficien They found it fast, easy to use and extremely capable, Flood says, especially in relation to the

stem it replaced. Before George Weston in illed the Encore package on ine PCs, the company had ed its financial modeling

frame. The microcomputer sys-tem best the service bureau arment hands down, Flood "It was faster, and it had

vere unbeard of then."

Under the service bureau ar-angement, George Weston paid eas of thousands of dollars each year to crank out its financial rets, and turnaround was slow.

ound time in half. deling package that the firm why migrated the bulk of its butter financial reing to the new system.

N THE process of pursuing their forecasts, early users discovered the general efficiencies of microcomputer software.

Eventually, the central office mandated that each of its 50 oping companies and divisions stain a dedicated IBM Peral Computer, running Encore and equipped with a modem, for the sake of streamlined financial

reporting. Today, every subsidiary runs

to the food processing division. At the divisional level, fina

cial officers consolidate the fig-ures further, so that the food es up with one set of figur for all its constituent bak of the four divisions then pa its vital figures, via modem, to George Weston headquarters, where a PC on a local-area network receives the data

With the information they re-ceive, corporate officers track weaknesses as well as signals of future direction. The officers repare and manipulate five-ear plans and other models, reforming "what if" analyses to determine, for example, what effect a prospective acquisition

verall financial results. George Weston's policy is to allow its operating companies al-most total autonomy, with operating decisions resting in the hands of the operating compa-Still, the corporate staff system provides them. "It's in portant for us to have at less

portant for us to have at least some understanding of how the companies are performing," he says. "The purpose of the sys-tem is financial control." Although the company has come to ruly on the Encore sys-tem for its bedrock reporting and analysis tool. To increase ac-tivity at that level, George Wes-ton signed a site-licensing agree-ment with Feror this spring that age. Between 50 and 100 cm oyees now work with the soft re regularly, Flood says.

The operating companies and divisions support heavier DP ac-tivity than does the corporate staff and can take special advan-tage of the modeling tool, Flood says, "Some of them have taken it and have built systems of their own that are in some cases far more sophisticated than the one more sophisticated we have," he says.

ironically, although the use of the software was initially im-posed on the operating componies by the infrequently invoked wer of corporate mandate, it has, Flood says, actually resu in more independence.

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#### Always watch your language

Machine dependence affects system price and portability

One of the things you may want bol, are fairly standard. There is to ask about your accounting program is, "What language is it

ritten in? The possibilities are myriad and include Cohol Basic C asbier, RPG, RPG-II, RPG-III. ton-Tate's Disse, Micro Inc.'s Rhase, Micro Data Base ms, Inc.'s MDBS-III and Data Access Corp.'s Dataflex, to

Why should you care about the language used to create your data base? Two reasons are foremost: portability and cost

Some languages, such as Co-

Numbers EDOM DACE CO evolutionary one McCormack & Dodge Corp.,

one of the largest accounting software firms in the country, is expected to be making some announcements soon that, accord-ing to Dean Redfern, M&D's corporate vice-president, will include references to data-based accounting, the second major trend developing in accounting software systems. Recent improvements in data base technology have, be says, spurred M&D to develop systems to take ad-vantage of data-based account-ing instead of file-based accounting. Data-based technology on large hardware system has advanced to a point at which it can support new

accounting system ap-A data base is a collecon of information. In the case of accounting sys-tems, the data base is a series of accounting transacsoftware keeping track of where it is at it looks like. Re-

istional data base theory has evolved into practical app cation, and hardware and software combinations from large uter makers are starting to

Relational data base technology is founded on a conceptual data base of relations, and all maninulations are accomplished by operations on relations. Using a nonprocedural language, it is possible to build new relations involving fields from several preusly specified relations. W this means, Redfern says, is that 'your widest info

dreams can come true M&D is also currently work-ing on applying artificial intelli-gence and natural-language technology to accounting soft

is that they work in only one At the high end of the spectrum are various programs such as MCBA's accounting/distion system — that provide the features and functions uch lower price. In fact. m

a generally recognized standard for Cobol that means a program written in assembler will generally run on only one type of mawritten in that language can be moved from one system to anchine and require a significant investment of time and effort if other said with some modifications can our well in a new envi nor hardware change may also

in accounting software."

Accounting software is not

just for large companies, howev-er, and the cost of buying the lat-

est technology is high. Fortu-nately, the difference in price

between high- and low-end pro-grams is shrinking.

complete programs on the mar-

ket sysilable for a very low price

Duc Software, Inc. started the

trend with its Dac-Easy Ac-

ELATIONAL data base

theory has evolved into

practical application,

and hardware and software

to make flexible accounting

computer makers are starting

tition, and now a number of pro-grams vie for the position of the

most full-featured, inexpensive

the accounting problems of a

small business with fimited ac-

tegrated accounting systems.

and features than the small sys-

tems, but their major limitation

At the next level reside the in-

se provide more flexibility

ogram available. While these programs often

e some shortcomings, they

combinations from large

systems a reality.

There are some surp

This type of system-to-system portability can mean significant cost savings for people who are

pendent language. Source code provides another od reason to ask in what language your accounting system is written. If the program is writnow with their software but ten in a data base language such as Dhose, like SBT Corp.'s SBT need hardware upgrades or changes. Some languages, howseries of accounting program ever, are machine-specific and

you can purchase the source these programs for versatility and flexibility. MCBA's system, for example, includes nine sep rate modules, each retailing f anywhere from \$750 to \$1,50

can end up costing hundreds of thousands of dollars. In addition, MCBA's system runs on large and small com ers, so you can start with a per computer system and sive into larger systems, such

counting system originally priced at \$49.95 (now \$69.95). which included general ledger, accounts receivable and payable, as Dieital Equipment Corp.'s purchase order, billing, inven-Programs such as the MCBA tory and forecasting functions. The market was ready for such a accounting system allow you to grow from your existing hardprogram, and Dac's product took off. Success encourages compeware to larger systems as the

need arises. function of programming conventions. MCBA's accounting system is written in Cobol, a language that makes system-to-system transportability simple. Standards inherent in Co-bol allow a program written for one system to run on another, provided the

There are some prereq

sites to shopping for accounting software. A thorough knowledge of the business you are going to be accounting for is a good place to start. You need to es chart of accounts if one doesn't offer an inexpensive solution to Frankly, most people would be well served to enlist the aid of their certified public ac-countaint for this job. Constant changes in tax laws make proper design an annual review for many businesses. For example, the recent changes in business

expense deductions requires re ions of expense accounts for nies Various types TV COME of businesses require different accounting information to satisfy too. A partnership differs subfrom a corporation. code and a copy of the Dosse program and modify the accounting system on your own.
You don't have to be as much of a technician to program in Dbase

If you aren't interested in honing your programming skills. petent programmers around who use the more common data base languages and can do mar difications are required. A mitenance programming for you at

One drawback to accounting sys-terms written in a data base lanpunge is that the systems may tend to run slower than those ritten in a regular program ng language. ounting systems writter in a common data base language may be easier to interface with other software than programs that use a unique file structure There are many programs that can read and write Dbase and other data base language files di-rectly, so extracting data from them may be less difficult than

with other languages. While the language used to nte your data base may not be the first question that pops into our mind you should remen her to ask that before you buy your accounting program.

It may not change your deci-sion, but it will make you a more formed purchaser, and it may allow you to better estimate the future costs associated with your nting system CUAWN DOVAN

UPPORT FROM THE VENDOR of the

program is just as important as the

program itself. If the vendor does not offer on- and off-site training programs on a regular while other programs running or networks and minicomputers basis, be suspicious. In fact, most reputable software firms will not sell a large system without requiring training.

> The second general rule is to spend enough time analyzing our business to be able to id fy the things you need to know to keep it running smoothly and

efficiently. If inventory is an imetani factor, be sure you can set up your accounts to provide you with the information you Do likewise with receivab payables and other aspects of your business. Every business

has certain pressure points that require only a little change to have an undue effect on the en-tire operation. They work just like a lever, with a little change at one end making a great deal of change at the other. In some ory. Make sure you know your pressure points, and then sign your chart of accounts to give you the maximum amount

Before you begin the actual oftware selection process, you should try to estimate amount of information you will be entering into the system on a regular basis. This will help you select hardware as well as software. If there is likely to be a lot of data@ntry, a multiuser system

of information about those

For all but the smallest busesses, fixed disk storage and reliable backup are two hardware ts. In this context, "rebable" means the purchase of a system that will encourage daily

Armed with this hardware inormstion, it's time to begin the software hunt. What are some of ts to look for

in accounting software? First, there must be sor sort of general ledger. The gen eral ledger is the heart of any accounting system, as it is home for the chart of accounts and the base to which all other functions report. From it, the halance sheet and the income statement

ere are a number of other functions usually found in accounting software packages, esther integrated into the general ledger or configured as separate modules.

An arron tracks vendors and check writing. It tells you who you owe, how much you owe them and when you owe st. It should also keep track of early-payment discounts so that you can write checks in time to take advantage of the discounts. Frequently, a purchase order program serves as the front-end for the accounts payable and/or inventory sys-

An accounts receivable sec tion keeps track of who owes you money. It should after the uses as much flexibility as possible in obtaining reports about who owes how much and for what. Included in the accounts re-

e section or as a separate module is often an order entry system, which speeds the entry of orders from customers. This program should provide a compiete record of which products are moving and which are not Sales analysis is the secret to staving profitable. Quite often.

the order entry program drives the accounts receivable system as well as the man

rmi system.

A payroll system is not uncommon and vill sometimes trade information with other areas of the system to charge labor anufactured inventory.

Manufacturing accounting may also include some kind of scheduling ram to help track work in progress or organize the man cturing process, also known as material requirements planning or MRP II.

tories also need to be track cturing process. A lottracking system for process manufacturers provides vital information about perishable, controlled or regulated products that might undergo a recall. Inventory control systems are often offered as freestanding modules.

HINGS ARE MOVING in the accounting software field, and the company that is not putting time and effort into research and development probably will not be in business in a few years.

Fixed-asset systems keep track of lant and equipment depreciation and may also double as inventory systems for

Other modules appear in systems, and any specialized application programs for specific industries have custom programs gned to handle just one aspect of the

A full-blown system can be an expen-

sive and complicated investment, rec ing considerable expertise to get it up and running. Even microcomput an cost much more than \$10,000 for software alone. Add to that the cost of systems consulting and design work and the training time it takes to get a system running, and you have a substantial capital

asset in your accounting software, hard-

ware and systems.

When you purchase a system of this size and complexity you need help getting set up, so support from the vendor of the program is just as important as the pro gram itself. If the vendor does not offer on- and off-site training programs on a regular basis, be suspicious. In fact, most reputable software firms will not sell a large system without requiring trains eir reputation is hurt by a bad installa than a single sale.

If you choose the right vendor and the right software, you will be well on your way to a successful installation.

There are many changes worthy of note in accounting systems. These make great topics of conversation with your software vendor. If you get a blank look from the sales representative, you may want to reconsider the firm be repre sents. Just as in every other aspect of technology, things are moving in the ac-counting software field, and the company that is not putting time and effort into re-search and development probably will not

be in business in a few years. There is no "best" accounting system. As with all things in life, various choices offer various strengths and weaknesses.

HERE is no "best" accounting system. As with all things in life, various choices offer various strengths and weaknesses. What is encouraging is that technology is making improvements possible in accounting systems.

What is encouraging is that technology is making improvements possible in ac-

The next few years will see expert sys-tems and AI technology finding practical lications in accounting software. Expert accounting systems will be able to study incoming orders and optimize the production-line schedule without human ention. Appropriate inventory levels will be maintained by systems that automatically know when to order replacement stock. Cash-flow management will be handled by systems that review rends and predict the future cash need of a company based on the budget.

This is not a long-range forecast; per sie have already begun to produce pr type accounting systems using these technologies. The value of such systems is that they provide more and more infor-mation to those that need it, while relieving the drudgery associated with grinding out the numbers. M&D's Redfern is already talking about nondisruptive pro ing (systems that come up once and never come down), Al and natural-lan-guage systems. "We are entering an era guage systems. We are entering an era of significantly more unrestricted sys-tems," Redfern says. "It is the software vendor's responsibility to take advantage of the advancements in systems soft-M&D and other forward-looking firms

have already seen the future, and they are building for it today. It remains for these innovative firms to seize the opportunity to work with more information and less data. That, ultimately, should be the goal of all accounting software.



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#### The well-educated sell: CPAs take on software BY ED SCANNELL

Asking computer retailers to devote less time to selling popular productivity pack-ages and more time to selling accounting software is like asking an 8-year-old to ea

fewer M&Ms and more brussels sprouts.
What has always made selling account ing software to corporate accounts an unattractive proposition, at least for deal

they rarely ask a customer all the right questions at the point of sale and, con quently, are continually fine-tuning stalled multiple-module programs. Tactually go out of my way to dis age my people from selling [accounti

to end," says one large East Coast who requested anonymity.

This attitude has been one of the most important factors holding back sales of microcomputer accounting software since it was introduced in the late 1970s. There is some relief in sight, however During the past year, vendors and deale have been finding an increased willing ness on the part of the Big Eight and large regional accounting firms to sell and sup-port accounting software. Many vendors say they believe this will create greater

awareness and stimulate sales. awareness and stimulate sales.
"Until recently, nobody appreciated
the lucrative accounting software market," says David Sammels, president and
chief executive officer of State of the Art,
Inc., a Costa Mesa, Calf-based developer
of accounting packages. "But in the past
12 months, we've began to see some gen-

"I think the accounting software ven-dors now understand that this market be-longs to the certified public accountant," says Wayne Harding, founder of Wayne Harding Associates, an accounting firm in Denver. "The hottom line is that account-ing software is integral to the services

ovided by public accountants." Since 1983, Big Eight firms have been etting up groups to write and/or sell ac-counting software to corporate accounts. Arthur Andersen & Co. was the first Big

Eight firm to develop and distribute its software to clients in the early 1980s. Most accounting firms have long been illing to write or customize software for their clients. Until recently, however, all but one or two were hesitant about enrsing or selling other suppliers' packearing it would compromise their integrity if they were to endorse one serve that integrity by endorsing products from two or three vendors, leaving

the final selection up to the client.

While most Big Eight firms still will not readily admit to selling other suppliers' products, more are actively reselling third-party packages, according to sever al accounting vendors.

"Accountants are a natural conduit for data processing information, whether it is

One example of the kind of relation-ships vendors and Big Eight firms are forming these days is the pending agree-ment between State of the Art and Del-

sitte Haskins & Sells. The two firms are scheduled to sign an agreement shortly under which the latter will add State of the Art's MAS 90 Master Accounting se-

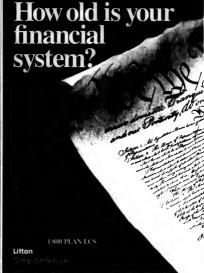
ries to a list of packages it recommends to 'Not all 100 offices fof De

sulting services for the package for 90 to 120 days. But most want to be hooked up with a value-added reseller in their area that they can work with, " be adds. According to Rob Kuhns, senior ma

Haskins, the firm has sim with Computer Associate Inc. for its Easy Business Inc. for its Easy Business Systems serie and TLB, Inc. for its Solomon III package

ith the number of packages out th today, it's impossible to know all of the well," Kuhns says. "We decided to ce trally look at 30 to 40 and, from that, se-

lect two or three products that will fit the needs of our clients or potential clients." The larger accounting firms are not waiting for accounting software develop-ers to come to them. Some of the more ressive firms are approaching devel-rs. Many believe selling software and viding consulting services affords em an advantage over competitors that





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#### Altering the code to suit the business

BY SHELDON NEEDLE

Accounting systems that allow for some level of customization are attracting increasing interest from end users as well as con-sultants. Consultants favor these packages because they create a demand for custom-program-ming services. Users are drawn because standard off-the-shelf programs often lack specific ca-

pabilities, and they would rather There are currently some 15 to 20 accounting systems on the market that could be called cus-tomizable. Some, like Realworld Corp.'s and Open Systems, Inc.'s product lines provide mod-

ifiable source code. Others, like Reveille from Microx, Inc. in Houston and Pro-IV Accountant from Applications Systems Corp. in Laguna Hills, Calif., are written in fourth-generation data base systems.

These systems address levels ration beyond modif n of an invoice or reor Such modifications used to re-quire modification of source code but now can be accomplished re simply. Many programs offer built-in invoice-design functions or ad hoc query and report-ing programs that either come with the system or can be purhased separately. Examples are Open Systems' Report Writer and Great Plains Software, Inc.'s

Report Maker Plus. Customizable accounting software is most needed when standard systems are not configured to handle certain types of data or when complex calcula tions are required. For example you may need to keep multiple sets of books for different cur-

The risk of customizing Customizing methods involve varying degrees of risk. Changing code in applications softwa can be dangerous because vendors will not support systems containing code that has been modified. And, of course, custom

programming can cost dearly. Using a data base-driven accounting package can be a high-risk affair, because once you have access to the data base functions, anything can be done to the data files. There is really no restriction on changing information and compromising key

Needle is president of Computer Training Services in Rockville, Md., publish and The Guide to Accounting Seft data. This risk applies to security as well, since users can easily change access codes with the

A compromise to dealing with puirements is to handle them off-line. This mean ing data from the account system to productivity software like Lotus Development Corp.'s 1-2-3 or Ashton-Tate's Dosse.

with more software, it protects the accounting data from unauorized changes. You should ask two questions efore selecting your approach: low absolute is the need? Is data

OU should ask two questions before selecting your approach: How absolute is the need? Is data available in the

available in the master file? If the answer to the second question is yes, there should be a way of get-

master file?

Many accounting software ven-dors now offer tools that assist in modifying their systems. Some, like IBM's Business Adviser, feature data managers that work directly with the accounting files and create custom reports and entry screens

ductivity Connection and Tool Kit for importing data to a system as well as for preparing spe-cial reports and analyses. The data import features allow users to set up validation criteria. rencies or consolidate purchase

These are ideal tools for consul-tants and value-added resellers. TLB, Inc.'s Solomon III offers its External Systems Interface program for importing data di-rectly to Solomon III files. Easy Business Systems offers its accounting software along with easily integrated Easyfiler, Easywriter and Supercalc spread sheet, all from Computer Asso-

ciates International, Inc. Some companies will nev quire more than off-the-sh require more than on-the-sness accounting packages. For oth-ers, however, a customizable package offers the only reason-able solution (or handling unique purements. The key is to un-

#### Flexible accounting system furnishes needed efficiencies BY SALLY CUSACK

At the Danbury, Conn., head-quarters of Ethan Allen, Inc., a frame accounting system allows the home furnishings npany to track accounts payable functions for its 16 ware-

Simple, easy to use and flexible are the three adjectives that Joseph Hart chooses to when discussing Global

nts Pavable and Global General Ledger, accounting systems from Global Software, Inc. Hart is corporate division controller at Ethan Allen, a division of Interco Corp. All accounting func-tions for the scattered ware es and centers are handled

Ethan Allen installed Glob Software's on-line accounts payable, general ledger and financial reporting system on an in-house IBM 4341 two years ago, after ng an earlier version of the rare for several years for

used, we were looking to gain iciency from the accounting system. Sixty percent to 70% of our general-ledger transactions come from accounts payable ac-

HE INTEGRATION. which was accomplished with some in-house programming. has resulted in daily

reconciliations that are completed in ten minutes.

tivity," Hart says. "We wanted a centralized function without in-creasing our staff."

Necessary integration
The company needed a product capable of integrating with its existing packages, which include inventory control and sales sta-tistics programs developed in-house. Ethan Allen's large volume of transactions makes it estial for the in-house pro grams to integrate with account

The integration, which was accomplished with some in bouse programming, has resulted in daily reconciliations that are completed in 10 mastes. A total consolidation program was also developed, a program Hart

finds invaluable to his opera-Another software vend

with a product found in the Ethan Allen shop is Natick, Mass-based McCormack &

houses and its distribution and Dodge Corp., whose accor-

> Ethan Allen's credit departme Hart says Global was a "very cione" second choice for that an olication, but the company found that McCormack & Dodge of-fered a slight edge in credit func-tions with the accounts receivable program

Although Ethan Allen writes much of its own software, the firm decided that in-house development of an online accounting system aid be unnecessary time-consuming Hart estimates it would take a minimum of two years to write such a

program, with three to six months alone spent in the preliminary plan-

accounting software marketplace is very competitive," Hart says. "There are 50 to 100 packages out

there. It is easier to purchase a pretested product that will be maintained and anced by the vendor.

Hart traveled to Ra leigh, N.C., with the in on to meet with Global Soft ware President Ron Kunferman and his staff. After a product prentation there, be decided to

Before signing on that dotted line, I find it necessary to vi it a user site - a user who has been up on the system for some time, perhaps even a user who has experienced problems. Hart says. "It is important to see the system with the reports and the on-line screen

Hart also looked at many oth-er software packages and viewed several different product demonstrations before deciding on Five days after installation,

the system was on-line, with the accounts payable function up and running. Although the compa-

ply to handle a higher volume of transactions without an increase in the number of staff. Hart has actually reduced his accounts payable staff by one third in the

The Global accounting pack age handles invoicing, deliv and stock receiving for the remote operations. All but the five service centers function on-line

via terminals, and the y plans to connect them as well in the near future. Ac counting is accomplished by product line, for example, wood furniture, case goods or accesso ries. All told, there is a total of 15 ferent lines, each categorized

EFORE signing on that dotted line. I find it necessary to visit a user site - a user who has been up on the system for some time, perhaps even a user who has experienced problems.

> IOSEPH HART ETHAN ALLEN, INC.

anto multiple subdivisions.

The accounts payable depart ment processes 10,000 invoces. monthly, with inventory control held responsible for several million transactions angually Ra creating separate statements for individual operations, such as warehouse or trucking, the sys tem ancreases the accuracy of incal operations monitoring. The financial results are then distrib. sted to all upper level executives as well as to 16 distribu-

Hart is especially pleased ith the program's report writ er. User-driven, it eliminates the necessity of programming while allowing greater flexibility. Reports can be created awarkly and then duplicated and distributed in different divisions without in volving data processing person-

The report writer function has resulted in two important gains," Hart claims. "Finance has a better knowledge of opera-tions, and the field operations staff has a clearer picture of what finance is doing. The program is easy to read and produces the types of reports management wants to see — clean and con-cise." •

#### The rise of vertical accounting software

cal orientation. Packages designed for specific industries currently represent more than half of all accounting software sales, according to the market research firm Future Computing, Demand for more precise

There is no clear division between the functionality of horizontal or general-purpose ac-counting software and vertical are. Indeed, one of the maor horizontal vendors. Great Plains Software, Inc. in Fargo N.D. actimates it has custo

re than 400 industries. So what defines a vertical package? In two words: specialtion and price. Vertical-market packages are highly specialused to meet the needs of a particular industry and usually cost from two to four times at much as their generic counter-

For example, a vertical-marset construction system typical ly costs between \$6,000 and

ERTICAL-MARKET packages are highly specialized to meet the needs of a particular industry and usually cost from two to four times as much as their generic counterparts.

\$8,000, while a horizontal sys tem with job costing included falls between \$2,000 and \$3,500. In some cases, the degree of specialization justifies the price, but there are also w packages on the market that are proced for vertical ability ore in name than reality

Typically, today's vertical soft ware performs well in one capacity but weakly in general applica-tions. It is not unusual to find a construction package with an outstanding job-cost capability ediocre general-ledger or unts payable system.

Some examples help to demonstrate the difference between a vertical and horizontal package in selected industries. For manufacturers, a horizontal system may offer a multilevel bill of materials function, but a true vertical-market system will also include manufacturing resource A horizontal construction system will offer cost-to-complet reporting and possibly retention ages may also offer estin subcontractor control and

Market concentration Software rendors are more pre-

cisely defining vertical-ma opportunities. In the health field, ndors will segment a mark by Standard Ind tion codes and break down health-care services into such categories as physician offices, nursing homes, hospitals and activity in the vertical market are point of sale, manufacturing and real estate and property детепт. Сопоры ally choose to concentrate on

those markets in which they can offer the best fit. Vendors are also working sely with value-added resel ers (VAR) to provide the right vertical-market solution. They see VARs as partners that can provide a total accounting solution in a vertical market. This

encompasses needs evaluation stallation, training and ongoing Many users are looking for

specialized software priced somewhere in the \$1,000 to \$3,000 range. Unfortunately, few such packages exist. So far, the market has successfully sup-ported a price gap, although this

Targeting market needs Some vendors, such as State of the Art, Inc. and Advanced Business Microsystems for an moving into this vacuum by developing strong, low-cost verti-cal-market packages for distribution and construction. These nies are working on job-

costing systems that are reportedly more powerful than those offered by most horizontal ven-The best source of informs tion on industry software are the associations particular to that in-

dustry. Some have even pub lished industry-specific software directories. Datapro Corp. pubhabes a reference on westiral Software manufacturers con-

tute another important source of vertical-market software inmation. Companies like Comouter Associates International Inc. - which develops Easy Business Systems — Open Sys-tems, Inc. and Regiworld Corp. publish their own directories of third-party developers that have ied their basic systems to

SHELDON NEEDLE

#### VENDOR VIEWPOINT

#### Software designers must merge finance, relational data bases

BY RICHARD LAWSON



entering a new realm relational data base. Some deers are excited, others frightened. And there's the usu ount of foot-dragging going on in the middle

talized on a large but previous runs in MVS, and the SQL/DS relational data base, which runs But no one really has any choice. The market is moving

help the DP manager narrow the Applying force from another irection is IBM, which has canthe development of both the DR2 relational DRMS which

What IBM offered previously

in terms of a mainframe DBMS, was IMS. But IMS was constant-

ly criticized as cumbersome

slow and expensive, and it faced

steady competitive pressure — from Calinet Software, Inc.'s

IDMS and from the various fit

vors of relational data base tech

nology offered by companies such as Unisva Corp., Hewlett

Packard Co. and Data General

becoming the industry de facto

standard for relational data bases, thanks to IBM's muscle

rate DP managers very happy Finally, there will be an industry

standard DBMS they can work

with, which will mean portability

SOL interface

match the speed of the personal computer, but they can at least

HE COMPANY CONTROLLER wants the full capacity of the main machine, and he wants it available with the same kind of flexibility and speed he is accustomed to getting from his personal computer.

in DC-DOS

ners into relational data base environments, and it's happening fast

Two primary forces are gen-erating this movement. One is the pull of executive, accounting and DP management at user ompanies; the other is the push of major computer companie most notably IBM.

Personalized systems What's happened on the user side of this application-merger issue is that executives and ac-

counting managers have grow their data bases. The company controller, for instance, can build his own system on his PC, using a data base, and have a program up and running in approximately an

ler now wants more. He is demanding the full capacity of the main machine, and be wants it able with the same kind of flexibility and speed he is accustomed to getting from the PC on his desk. When the controller goes to the DP department and it is useless for the DP manager to say, "Fine, but that will tak at least three months, and it will cost you 'X' amount of dollars."

However, that's exactly the answer the DP manager will, in fact, give the controller — if be doesn't have a built-in data have management system in his enronment, particularly a relation-al DBMS. These tools canno

Lewson is a co-founder, chairman of the board and vice-president of research and development at Lawren Associates. from PCs to different brands of software. And the relational technology will offer the flexibility of data gathering and reporting that company executives and accounting managers want like the ability to run on-line and transactions simulta

Drowbocks But what about the trade-offs or

the outright negatives? A muor question ingers about the use of computer resources. Does DB2, for instance, really eat me like a hungry elephant? And does it take up too much CPU capabil-

designing SQL-based application software for accounting systems such as general ledger, accounts payable and receivable, fixed assets and project accounting, I would have to say that the answers are the following: Yes, it uses more memory but not that much, and, yes, it uses more PIT but it's not that bad

There are challenges. surse. There will be conversion ists for taking the old system and reprogramming for DB2 or SQL/DS, for instance. However, IBM's push is working, as is the pull from users, company executives and accounting managers.

OFTWARE COMPANIES offering accounting and financial software that doesn't follow this data base orientation will be out of business sooner rather than later. because nobody is going to buy non-data-base-oriented accounting and financial software.

Now, IBM is pushing DB2 and which means that corporate DP SQL/DS very hard in order to departments don't really have a sintam market control and choice. feed everyone the IBM SQL

There is also no choice for the signers and developers of software packages for accounting lorp, have already seen, SQL is and financial applications. Nows. days, software must be designed accepted practices for normal used data bases. Software com

and the fact that it is an excellent nies offering accounting and fi-Ten years from now, then ncial software that doesn't will not be a valid mainframe mafollow this data base orientation will be out of business sooner chine on the market that doesn't ize a very valuable data base rather than later, because no-That data base will be relation body is going to buy non-data-base oriented accounting and fiand will be SQL-based or have an This will make many cor

Pull or push, it comes to the same thing — something's al-ways got to give and, in this case. it's going to be non-data-base

### Microcomputer accounting software

COMPANT	PRODUCT	MODULAR OR INTEGRATED PACKAGE	STANDARD MODULES,	OFFERS USER-DEPEABLE REPORT FORMATS	CREATES COMPARATIVE STATEMENTS	POSTS RECURSING TRANSACTIONS	MINIMUM MEMORY REGURED (IN SYTES)	SPETREFACES WITH EXTERNAL SPEECHS, DATA BASES	OFFIRS MACTRUSER CAPABALTHS	D) E
ACS, Inc. 7140 4724186	ACS Accounting series	Medide	General Indiger, servenies payeble, scottenia receivable, payend, investory	Tm.	Yes	Ter .	206E	Astern Type Dinger III. Letter 1-3-3	Tes	\$300 (per mobile)
	Prop	Medigier	General belger, accounts payelle.	Tex	No	Tes .	254K	No	No.	\$495 (per mobile)
DS Sefeware, Inc. 800) 672-4422	ADS General Accounting	Modelar	General ledger, accounts payable, accounts receivable, payroll, arrestory	Tes	Yes	Tes	128K	Letter 1-2-3, Ashcor- Tate Phone III	No	\$1 095 (total system cost)
ATMS, Inc. 2000 S&1-5187	ADICAS	Medicine	Courted beinger, accounts payedile, accounts reportedly, inventory control, andse order processing, part does order processing, time and belling, payed Comeral beinger, accounts payedile.	Tm.	Sin .	Optional	128E	Microsoft Multiples, Letter JD.3, Vascott (etg optional report precessor)	Yes	\$895 (per module)
TAT/American Bosiness Systems, Inc. 800: 247-1212	System Accounting	Modelar	eventory management	N.	-	-	128K	No.	No	\$2.325 (total system cest)
Locountante Software Co. 619: 663-60-6	ASC Client Accounting	Integrated	Clear accounting, payed reporting, for payed check writing	Tes	Tα	Tex	2546	Letin 1-3-3, Symphony	Yes	\$1,895 Outpi system read)
Accountants Microsystems, Inc. 8001 426-8201	Business Partner series	Modular	General ledger, accounts payable, accounts receivable, payent	No	Tm.	Tes .	3848	Any ASCU or DIF file. Letter 1-2-3, Aultson- Tate Dispor	Yes	\$795.\$1.095 (per module)
Advanced Business Microsystems, Inc. 1714) 861-8722	Platinum series	***	Control below, accounts payable, accounts receivable, payroll, consolidation, fined posts, irrespory costrol, order entry, payables order processing, job costing, bank heels, report writer.	Ta .	1=	t=	36d	Lettes 1-3-3, may ASCII on DIF file	Tes .	\$296-\$1,765 (per module)
Upha Microsystems 714) 957-8500	Alphaledger	Modular	orean ledger, accessor pepalie, accessor receivable, order entry, avestory control, fland-search tracking, payed, parchase order processing, claric reconclusion, report writer, screen writer.	Tes	Tes	Tm .	SOE (per user)	S.	Yes	Contact weedur #
Systems, Inc. 5700000 (5000000)	A26 Accounting	-	General Indiger, secretar payelle, account, receivable, payeral, finer posts, order dressing, expert wither	Too	Yes	Tes	126K	Letus 1-3-3, Microsoft Multiplies, Informis	Tes	Contact weeder
Serican Fundware, Inc. 8001 551-4458, 8001 227-7575 (in Cole.)	PC-Fund	Modular	General ledger, accesses payable, accesses recorreble, payers, found assets, obligation tracking, budget forecasting, desire receipts, security system.	Tes	Υœ	Ten	512K	Any package that supports ASCII files	Yes	\$995-\$1,595-tper module1
Lawrices Seffects, Inc. 404) 391-9101	Mues	Integrated	General Indiger, accessed payellels, accessed receivable, order entry, arrestory control, payell, job control,	T-	Yes	Tes	SISE	Lens 1-3-3	Tm.	\$995 (lintal system cost)
Emerican Standard Computers 804) 467-1789	Boscirosm III +	Modular	Concret intger, accounts psystile, accounts recorreide, order entry, sales arreiding, arrentney, payroll, più contag, check recognitione.	Tes	Tes	T-	254K	No	Yes	\$895-\$1,095 (social system (set striudes breeze lee)
Analytic Services, Inc. 7130 974-0043	-	***	Cond. consciliates. General indges, recognis payable, sermants reached in, poyerd, proservator, job melting, reachesal territority melting and elementary expense, reachery or description expense, reachery of elementary	1-	t-	Ter.	telk	Art ASCE for	Te	\$2,000-\$3,000 (per module)
Spolied Digital Corp. 600: 234-3666	Financial NGR	Medder	Control Indger, accounts payable,	Tes	Tes	Tes	64X	No.	Yes	Contact rendor
Lower Systems, Inc. 2001 009-0753	Exalter Pas		Control belger, promote payable, accessed receivable, secondary control, point of side, purchase order processing, jib conting, payroll, billing, controller advantages and billing.	Y=-	Ten	Tes	364K	Lates 1-3-3, my ASCII Str	Tes	\$395-\$605 (per rendale)
	Brown Stated Management Strategy	Integrated	Accounts receivable, billing, point of subs,	Yes	No	No	2548	Letter 1-5-3, top ASCE	Yes.	\$665 Guital system cost0
	Brown General Accounting	Integrated	General belger, accounts purpose, payed	Yes	Yes	No	254E	Lates 1-0-1, any ASCR	Te	9006 Dotal system cost)
ledford Software Corp. 306) 883-0074	Lateral Accounting	Integrated	General integer, accounts psychile, accounts recombile, psycol, arrestory, ash resister.	No	No	No	254X	Lotus Symphony, say ASCII file	No	\$249 famal system crest)
1000   SS1 - B483	Sea Plancial Series	-	General belger, accounts purpose, secretar receivable, purpose, immunory control, errice setty, immunos, granulature interface, time and billing	No	T-	Tea	136K	Lots 1-3-3, Moresh Meliphe	Tm .	\$195-\$1,506-(per meduir)
triated Information Systems, Inc. 617) 679-1051	BIAS	Module	General Intger, accounts recompile, accounts payable, payoral, accountary	Tes	Tes	Yes	3848	Any ASCII file	Tes	\$800 (per module)
255 Associano, Inc. 5160 463-2123	The Accountant		Count being, common payable, account receivable, who well- proceeding breather, perchase with processing, and with companies.	Yes	-	7=	2548	Lotm 1-0-3, Asiana- Tate Disser III	Yes	\$1,505 (per ambala
CIE Systems, Inc. 714) 660-1800	CIES Accountant/680	Modular	General indger, accounts psychie, accounts receivable and make analysis, arrestury control, order processing and processes	Tes	Tes	Tes	SIEK	No	Yes	Contact weedor
TYMA/NeGrow-MM Corp. 2000 203-2042	CYMA Profusional Accounting series	***	General beiggs, accounts payelle, accounts receivable, payed, accounty	Ter.	Ter	Tm.	126E	Papertack Software VP- Planner, Lotte 1-3-3. Address Tyte Disease E. III	Yes	SEESE-STREET (part

COMPANY	PRODUCT	MODULAR OR INTEGRATED PACKAGE	STANDARD MODULES, PARCITORS	OFFERS USER-DEPROABLE REPORT FORMATS	CREATES COMPARATIVE STATEMENTS	POSTS RECURRING TRANSACTIONS	MINIMUM MEMORY REQUIRED (IN BYTES)	INTERFACES WITH EXTERNAL SPREADSHIETS, DATA BASES	OFFEES MUNTIUSER CAPABILITES	DINA
California Sultreuro Producto, Inc. (714) 973-9440	Shipp(96 Femorial Application	Montaker	General helper, accounts psychia, accounts regardate, psychia, fluid psychia	No.	T=	Yes.	mer	No	Yes .	BSSC (per models)
Case, Inc. (801) 226-8926	Eagle series	Modular	General ledger, accounts psychic, accounts receivable, psychid, amentory, checkbook	No	Yes	Yes	512K	Lette 1-2-3	Yes	\$585 (per module)
Carattes Corp. CE149 484-7976	Certifies	Module	Control beign, mounts payable, accounts represently, payable, arrestory, order entry and purchase order.	Tes.	Tes	Yes	STEE	Any ASCE Go	Yes	From \$805 (per modele)
Chang Laboratories, Inc. (800) 973-8900	Rags to Riches	Modular	General Indiger, accounts popular, accounts recognitie, arveniusy control as time billion, surveil	Tes	No	Tes	254K (MS- DOS), 512K (Maretteck)	Letse 1-3-3, Microsoft Excel, any file that supports Clipboard	Tei ·	\$199.95 (per modul
Charter Bosso Seltrons Corp. (\$1.00 001-0077	Charter Finance Accreasing Systems	Mobile	Consent indger, normatic papelitis, accounts recordable, job contrag, billing and investory papells, order entry, perchase orders, data field and report	les .	Yes	Te .	ME.	Any ASCII or DIV file	Yes	\$796-63,700 (per media)
Chilone's Management Controls, Inc. (714) 980-5338	Chiton's Management Accounting Package	Medaler	General ledger, accounts payable, accounts receivable, payers, fined sects	Tes	Tec	Tes	128K	Yes (no examples produtie)	Yes	\$1,800 (per module)
Check Address Programs (\$17) \$49-9149	Quint Clark	Moteler	Account payable, accounts receivable, levidinousse	No	Tes.	1-	2546	No	Yes	Press \$40.55 (per models)
Colman, Organ & Co. (403) 482-5751	Costar	Integrated	General ledger, accounts psychic, accretio reterroble, financial reporting, print of sale, order entry, purchase order processing	Орежня	To	No	640K	Ne	Yes	Contact vendor
Commercial Solution, Inc. (404) 333-0771	Accounting Chanics	Medide	Control belger, accounts popular, accounts requirelle, papeal, pressurery	-	Ten.	Tet .	200K, 512K Germany methol	16	Tes	\$005 (per module)
Computer Associates International, Inc. (404) 433-1727	Eary Sunteen Systems Accounting	Modular	General brigger, accounts psychic, accounts promovable, payred and mices marked, polycoming, amendacy control and marked, retail amendac, time billing	Yes	Yes	Yes	129K	Lotas 1-3-3, Computer Associates Supercalc, Autono-Tate Disease, any ASCII, SYLIX or DIF Sie	Yes .	\$149-\$995 (per module)
Corp Software, Inc. 07130 3003-3177	Percei	Modeler	Control Indger, accounts payable,	Yes	Tec	Ter	FUR	Any DataGes product	Yes .	\$100 (per medián)
Corporate Consulting Co. 817) 484-1715	Corporate Consulting Co. Integrated General Ledger Package	Integrated	Governá indiger, accessito psysiále, accessito receivable, psysiál (optional)	Yes	Tes	Tes	SIZK	Propriesary	Tes	\$4,500 Datal system cost)
Comp. S10 aps 400	Pro-Pt series	Meditor	General beigar, accounts popular, occurate recurrence, greatery control, properly, order cetty, purchase order, mini- malysis. Class without after disaster second.	Xa .	Yes	Optional	2000	Any ASCE or DOT Bu	Yes	Prom 8005 (per module)
	America	Impant	Cleat velo-quater-to-lest payed, time billion, der-date secondary	Tes	Tee	Tes	396%	Any ASCII or DEP file	Yes	\$1,605-\$2,905 (lipta system cost)
Coston Software Consulting Services, Inc. 516) 271-1080	Business Manager	integrated	General indper, accounts persolal, accounts receivable, order entry, amenings, purchase order, payedl, sales reporting	Tes	Tes	Yes	512K	Any ASCII or WKS file, Lotus 1-2-3, Ashton- Tate Disse III	Yes	Contact vender
0 & 5 interestional, Inc. 961) 363-3030	Streke Manganet Spine	Impani	General index, accounts payable, accounts receivable, job creating, arrestory, under extry, equipment	Tm.	2m	Tes	254K	Letter 1-3-5, any ASCE Se	Yes	\$800-\$0,000 (secul system cost)
Dac Software, Inc. 214) 458-0038	Doc-Easy According 2.0	Mohite	Gateral Indger, accounts payable, accounts receivable, billing, parchase orders, greenay and investing	Yes	Ĭa	Yes	2568	Letus 1-3-3	No.	\$49.95 (total system cost)
Stal Bes-cool	Sr. Accounts	Inquel	General Indger, accounts payable, accounts recorded, investory, graphics, trial Indexes, associaly reports	Tee	Yes	Yes	-	No.	Ten	\$99.95 (notal system cost)
hicamenter Business Center is division of Crownetch, Inc. 506) 456-8877	York St. Software	Mohiler	General infiger, accounts purpose, accounts receivable, parchase order, usine order precessing, trendery management, payrol, pit conting, preceivey cooling, fell of material.	Tes	Tes	Tes	512K	Letus 2-3	Yes	\$800 (per module)
714) 730-8116	Pro Accountant	Medular	General index, accounts payable, accounts receivable, broadery countril, takes order entry	Tes	Yes	Ym	51 <b>3</b> 0	No _	Yes	From \$500 (per metals)
Secret Systems, Inc. 513) 223-4849	Deneb Construction Accounting and Satingting	Mohitar	Concrat length, accounts persists, accounts receivable, persist, just contain, providing, artestory, purchase order, from halling, apparent control, estimating, report	Tes	Tes	Tes	512K	Any ASCE Re	Tes .	From \$895-\$1,965 (per mediale)
Nginal Sultivara Corp. 1147 203-1040	Gold Subware	Integrated	General indger, accounts payable, accounts recombin, payeral, jub-coming, order entry, greatery, breiting, report presenter	Yes	No	Tes .	1965	Yes, so examples available	Tm .	Contact vendor
Inancial Information Systems, Inc. 1900 527-4661 214) 680-8696 (in Texas)	Maltipac	Meduter	General integer, accounts psychia- accounts receivable, arracting, seventary, payroll, job costing, checkbook manager, then bloor manager, departmental accounting	Tes		Tes	329K	Any ASCIII or SYLK file	Yo	\$595 (per medale)
	Powerpac	banguard	General ledger, accreets psychic, accounts receivable, streets, sevenant	Yo	Yes		320K		Ne	\$765 (total system cost)
Secul Systems, Inc. 106) 773-4020	Pacification Management System	Media	General beiggs, accounts receivable, accounts populate, populat, inventory control, petal of sale, sales order processing, purchase order processing	-	Tee	*	254K	bdente .	Yes	\$500-\$700 (per media)
Pretruseer Development Corp. 1000 654-7494 1150 376-1332 (in Calif.)	CM Plus	Integrated	General Indger, accrueits purable, accrueits excernible, puredi	Tes	No.	No.	384X	Lotus 1-0-3, Paperback Software VP-Planner	No	\$199 Octal system cost)

COMPANY	PRODUCT	MODULAR OR INTEGRATED PACKAGE	STANDARD MODULES.	OPTERS USER-DEPINABLE REPORT FORMATE	CREATES COMPARATIVE STATEMENTS	PORTS RECURRING TRANSACTIONS	MEGANISM MEMORY REGUMED IN STITS)	INTERNACES WITH EXTERNAL SPEEJADEHETTS, DATA BASES	OFFEES MALTIUSER CAMBRITIES	Dist
G. B. Systems, Inc. 714) 963-1811	The Decision Manager	integrated	Course below, screens mentionly, screens, peptide, order stay, descrip- cation, performance processing, 14 metry, force stay, who reporting	Tes	Ten	Tm.	1568	Any ASCE to	Tes	\$2,500-52,600 (min
Setware, Inc. 800) 528-5015	One-Write Plus	Modeler	General ledger and checking, accounts payable, accounts recorrable, payroll. transfer strikes	No	No.	Tes	254K	Asy ASCE, STLE or DO		\$79 95-\$295 (per mobile)
Great Plains Software, Inc. 1800) 345-3276	Great Plains Accounting sectors	Metaber	Count helps, according positio, according recording, investory, order entry, partiess order processing, separa- where, submid-manager	T-	Te	Tes	MAK	Lotus 1-3-3, Automotive Disease, any ASCII or Diff Size	Tm.	\$305-8005 (per randate)
Hal Systems and Services, Inc. 214) 248-4008	Pashal/Net	Integrated	General ledger, accounts psychle, accounts recordedle, part-enement billing, revenue databation	Ym	No	Yes	250K	Lens 12-3	Tes .	\$10,000-\$15,000 (total system cost)
Some Belivere 914) 273-3996	Soud Bosiness Accounting	Integrated	Countlidge, pared	No.	No	No	126K	No	No	\$100 (total system cost)
lerricase Systems, Inc. 305: 174-6888	Businessee	Integrated	General Indiger, accounts psychle, accounts recomble, payrol, inventory, oppose orbitos, letter processing	Ten	Ym	Yes	1064	No.	Tes	\$2,586 (local system cost.)
(104 (200) 447-4700 or contact local ISM office	Baises Africa	Make		Yes		Tes	SER	Ang ASCE on DIF the	You	\$345-8905 (per montale)
	Accounting Assistant	Modular	General accounting, accounts psychle, accounts receivable and billing, payroll, aventury-control and purchasing, pile control	No.	No	7-	2568	Any ASCII or DIF file	Tes	\$505 (per module)
ISS Computer Services 7000 434-4177	Alpah/Congo Business Managananti System	***	County Seller, scenario populio, secondi beliare, scenario populio, secondi recordide, papell, sale, and seller, trendroy, carb messipo and debensarios, data promptored	Tee	Yes	-	24	Long 1-0-3	Yes	\$1,500-(swange total system cost)
idea Computers, Inc. 713/342-5846	bert	integrated	General belger, acrosses payable, acrosses receivable, payroll, letter writing, fixed sparts, small	No.	Yes	No	512K	Aubton-Tate Disser fil	No	\$150 Dotal system cost)
	lman	langual	General ledger, accounts psychle, accounts recorrelate, payroll, letter arriver freed marts, payroll, letter	No	Yes	No	512K	Author-Tate Disser III	No	\$350 (Letal system cost)
	Iretail	Integrated	General belger, accounts psychlic, accounts cocareable, payroll, letter writing, fixed marts, real, product	No	Yes	No.	512K	Aghton-Tate Disease III	No	\$250 Dutal system cost)
210 630 1343	bulliours .	Minder .	Course below, second parella.	Yes	Te	Te	SUR	No	Ym	\$200-\$790 (per conduits)
Interactive Information Systems, Inc. 16021790-4214 International Microgramm, Inc.	FAS	Moduler	General ledger, accounts psychile, accounts receivable, order entry, payred, fined papers	No	Ym	Yes	512K	Oracle SQL Cale	Ten	\$1,500 (pre mediale)
300) 266-4233	Porte on Desires			*		Te.	512E (BANG), 3000 Gund 4440	Aug ASCII file	T=	\$850-\$1,995 (per modula)
James River Group, Inc. 612) 339-2821	Accounting for Micros	Moduler	General briggs: accounts payable, accounts receivable, payroll, investory, più casting	No	Yes	Ten	192K	Any ASCII file	No	\$125-\$195 (per mediale)
	Dealtop Accountant	Moduler	General ledger, accepts payable, acceptain receivable, payeral	No.	1	Yes	190%	Any ASCE für	No	\$495 (lotal system cost)
	Open for Business 1	Modular	General brigge, accounts psynthic, accounts receivable, psynthic implication	No	Tes	No	256K	No .	No	\$595 Ontal system cnet)
	Open for Business II	Motular	General ledger, accreasis payable, accreasis recorrable, arrestory, payrell (options)	No	Tes.	No	mer.	No	No	\$995 Ornial opstern cost)
Section & Evictoria Section of Technology, Inc. 416: 401-0430 for Careella 214) 400-3480 for U.S.)	James & Reichner Accounting Software		General Indge, accounts payable, growth receivable, payed	-	-	7-		Aug ASCE No	Yes	Contact weeder
KIS Information Systems, Inc. (604) 663-8100	IGS integrated Accounting System	Integrated	General belger, accounts psychia, accounts receivable, hilling, land reconcilation, aspert self supert	1-	Yes	No	254E	Any ASCII or DIF file	Ne	\$605 (total system cost)
7 (3) 904-0363	Erysteen Plannish Accounting System	-	Count halps, arrest parell, account restricts, parell, job soming, processed attenting	700	7-	Yes	ME	Am ASCI at DIF Sa	No	9796
Erystone Technologies, Inc. 717) 975-7120	The Practice Management System	Motuter	General indger, economic payelle, accounts receivable, payeral, word processing	Tes	Ten	Tm	1.000K	No	Yes	\$7,000 tracal system cost)
LAX Dystems, Inc. (8) 2) 483-8221	Pro-Maca	Menter	Canard Indoor, account purelly, account resolvable, payeral, fluorist discussions	Tea.	Te	Te.	640E	Letter 1-0-3	Tes	\$2,540-\$3,360 (pm
Lake Aremse Software, loc. 8180 351 5483	Assertant Controller series	Modular	General integer, accreate payable, accounts receivable, enhanced financial reporting, governory, order entry and among, paymil, als contage, professions tage and bulling	1-	1m	Ym	348	Ashton-Tate Disse 12, Framework, Letter 1-2-2		
Systems, Inc. (1911) 722-0100	Lambout Accounting on Processing Management Springer	-	Concel below means profits, market records, francis species, for man, all many conserva- tions man, all many conserva- ments man, all many conserva- ments are a second conserva- ments and conservations.	Ten	1-	Yes	-	Any ASCE Co.	Yes	\$6.000-\$20,000 (po modula)

COMPANY	PRODUCT	MODULAR OR INTEGRATED PACKAGE	STANDARD MODULES. FUNCTIONS	OFFEES UNER-DEFINABLE REPORT FORMATS	CREATES COMPARATIVE STATEMENTS	POSTS RECURRING TRANSACTIONS	MINIMUM MEMORY REQUIRED (IN BYTES)	INTERACES WITH EXTREMAL SPREADSHIETS, DATA BASES	OFFERS MULTIUSER CANABILITIES	D
Libra Corp. (800) 463-3627	Liter Accounting Software	Market	General Indiger, accounts pupeline, accounts recordable, order entry and balling, streaming control, payed, job conting, property immeganisms, client write-up	To.	Te	Tes	254%	Lates 1-2-3, Symplese, Addition-Tate Diseas, say ASCII file	Yes	\$1,960-\$3,900 (per medido)
Link Systems International (201) 894-1308	Link Accounting	Integrated	General indger, accounts payable, accounts recentable, precising, purchase order, uses center, uses representative, referention retrieval	Yes	Yes	Tes	64K	No.	Tes	\$1,500 (per module)
Linean Computer System (801) 535-7(80	Limos Accounting System	Modeler	Court inter, account payable, account payable, areases, breiding, payable	Tes .	No.	Yes	640E	X-	Tes	\$299-\$399 (per modulo)
M & C Systems, Inc. (201) 729-9080	Fospec	Meduler	General Indiger, accounts receivable,	Yes	Yes	Yes	256K	Any ASCE Ge	Yes	\$3,000 (setal system
H & D Systems, Inc. (714) 003-0623	Myte Mpke	-	County beigns, accounts recordedly, account provide, order entry belling, parties order precessing, other analysis	Ten .	Yes	Yes	2546	No.	Tes	\$795-\$1,495 (per module)
MCRA, Inc. (818) 242-9600	MCBA Accounting/ Describation System	Modular	Commit ledger, accesses pepalie, accesses recoverable, peprall, customer order processes, perchase order and recoverage, arrestory ensugement, bill of motorcale, report woher, data bridge	Tes	Yes	Tes	256K	Lotus 1-2-3, Ashton- Tate Disse III, Microsoft Multiples, any ASCII, DIF or SYLK Sie	Yes	\$750-\$1,500 (per module)
ISCC Sultivare (516) 276-3367	Longrand Accounting System	-	Control below, accounts purchly, accounts recorded, paperal, familial accions	Xe .	Yes	See	15E .	No	Но	\$305-\$606-(per models)
MC Seftware, Inc. 0160 756-8104	home .	Modular	General Indiger, accounts psychie, accounts receivable, payroll, accounts psychology, sales order entry, report writer	Yes	Tes.	Yes	SEZK	Any ASCII file	Yes	\$495-\$1,295 (per medule)
Marela, Inc. 600) 400-0034 3000 400-0035 (ja (hala)	Marsh Personal Saltrage	lespend	General belger, increasing specific, accounts received by paperal, martin and department of the processing particles order and receiving, but the order and receiving, but of amounts	1-	Te	Tm.	SUR	Loby 1-3-3, Jahren Tate Dham	Yes	2795-5006 (per medical)
Management Information Systems Corp. 1890) 872-6472	MIC Accounting System		General indger, accounts payable, accounts recornable, accounts recornable, arrestory, payeral	Yes	Tes	Yes	906	Alpha Microsystems Alpha Rese, Alpha Calc	Yes	\$5,000-\$10,000 had system cost)
	Job Contag and Accounting Systems	Integrated	General lariger, accounts payable, accounts recovable, più conting, payroll, accounts, seut augmentator, estimating, word processing.	Tes.	Yes	Yes	50K	Alpha Microsystems Alpha Base, Alpha Calc	Yes	\$4,500-\$20,000-box system cost)
Managelt Corp. 1800: 200-41 23	Renty-to-Ras Accessing with Letter 1-2-3	Modaler	Consent Indiger, accounts payelle, accounts recognitio, payelle, accounts and order entry	To	Tes	Te	mex	Lena 193	No .	\$40.55 \$60.55 (per mobile)
Managanta Software Systems Corp. 916) 781-3880	Russesswarts PC	Moduler	General index: accounts payable, accounts recornable, amenintry control, payroll, sales arracing, system manager	Yes		Tes	254K	Lettes 1-2-3, Microsoft Michiglan, any ASCII or STLK file	No	\$395 (per mobile)
Negarest Systems, Inc. 201) 487-9788	Magdies	Impaid	Control ledger, accounts payable, accounts receivable, payeral	Yes	Time	Tes .	228	Any oppositions or data bear that rate on Park contribut cream	Tes	From \$2,000 dutal system-cod)
Micro-Art Programmers 805) 962-0922	MBAcount	Modelar	General ledger, acrosets payable, scoresto recorrolle, greetian	Tes	Tes	No	128K	No	No	\$50-\$80 (per mobile
Mero Associatos, Inc. 4001 963-3063	Man According series	Meditir	County beings, accounts receivable, accounty payelle, make providing, specially country, payeral, job country, second, company, application company,	No.	Ter	Te	25411	Any ASCE or DEP file	No	Contact weather
	0	Medde	Constal ledger, secreto payable, payable	No		Yes	254E	Any ASCE or DEF to	No	Contact weeks
ficro Dopinerus Applications, Inc. 6127 894-3470	Micro Busness. Applications Accounting Software	Mohite	productively blandars General ledges, accounts recordable, accounts psychola, payroll, awardury, psychiate order procusing, value refer- ently, fased succh, job custing, professional state accounting, malicumpury upons, network statement, accounting manager	Yes	Tes	Tes	128K	Let as 1-2-3. Computer Associates Supercule. Aukton-Tate Disse III. any ASCII file	Yes	\$595 (per mobile)
Baro Computer Instance Services 1000 367-4327	Complete Accessing Package V.4.3	Mobile	Count biggs, provests psychic, accounts recognitional order entry, arrestory and purchase order, psycoli	Yes			254E	Autom-Tate Dhase, Later 1-3-3	No	399 95 Cottal system cost)
Ecro Financial Corp. 518) 961-0237	Pleavare	Modular	General belger, accesses payable, accesses receivable, investory, payed, parchasing, order processing, selecution	Tes		Yes	254K		Yes	\$795 (average per module)
Screptus Software, Inc. P077 886-0181	Accounting Plus	integrated	General bulger, accounts proposed.  Centeral bulger, accounts proposed, accounts receivable, inventory, paymel, purchasing, order processing, job counting.  Conserval bulger, accounts proposed, accounts recognition, proposed, accounts recognition, proposed, accounts recognition, proposed, accounts proposeding, provided on the final marks.	*			296K	Letter 1-3-3, Computer Associates Supercali, any DIF Sie	Tm.	\$405 (per modulo)
Erren, Inc. 713: 461-4383	Reveille Customer Accounting Seltware	integrated	General integer, network gratem manager and report verter, accessib psychie, accessis receivable, sales analysis, contrater callback forwatery, order cety, assession.	Yes	Yes	ĭn	512K	Any ASCII file	Yes	\$795 (per mobile)
Ed-American Control Corp. 800) 636-5518		Medaler	General Indger, acrosses populits, acrosses receivable, budgetag	Tee			394K		Yes	\$1,000 (per medula)
	Public Budgeting and Accounting	Metalar	Control belger, actions populie, accounts recordife, belgering	Ter	Tee	Y-	mer	Letter 1-3-3, Symptomy	Tes	\$1,000 (per anadala)

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COMPANY	PROBUCT	MODULAR OR INTEGRATED PACKAGE	FINANDAED MODULES,	OFFERS USER-DEFENDALE REPORT FORMATS	CHEATES COMPARATIVE STATEMENTS	PORTS RECURRING TRANSLACTIONS	ARCAMAND (NA SYTES)	BETERACES WITH EXTERNAL BASES	CAMBILITIES	Dist
Minut. Inc. 1117) 933-9546	Mind ACC		Count helps, second partie.	1=	-	-	-	Jay 107 th.	1-	\$2,000 (per mobile
Messagram, Inc. (213) 533-2190	Dellars and Sense	integrated	Double-only screening musts, liabilities, expenses, screen, charleng, muses streaments, believe streaments, your-to-date sententies, cash-flow budge makes, forecastion	To.	7=	Ter	256K	Yes the examples creditable	No	\$179 96 Outal eyes cost)
01.00 7779-1720	Separate	Makin	General below, moreon payelin,	Ten	T-	7m	SUE -	Lates 1-0-E, my ASCE	Ten	\$1,400 (per medid
Agents Interview 419) 435-0404	Standard Accounting Package	Moteler	Payrel, accounts payrel, accounts receivable, usins directory and partienting, present indiger, foref-counts	Yes	Ten	*	294E	No.	No	\$190 (per medule)
	Advanced Accounting Package	Modeler	General indger, accounts payable, accounts recognitive, mine accountry and purchasing, final-ments irrepairry	Yes	Yes	No.	254K	No	Yes	\$490 (per module)
Pilestes Computer Systems, Inc. 2000 SAS-6200	O'Balas Data Base Management darks	-		Te .	100	-	204	Margin, or 10° or 171,E de	Ten	Seed Addit Spart
Opan Systems, Inc. (800) 328-2375	Open Systems Accounting Subvesce	Mobile	Control bulger, accounts payable, accounts receivable, terestory, purchase order processing, uses order processing, payered, report wetter, faced matter, bearing payered, report wetter, puls causing projec- estimating than and beling, receives accounts.	-	Yes	1-	256K (DOS). 512K (Kenn. Umn)	Lens 1-3-3	Tm.	\$395-\$995 (per mobile)
COLUMN TO SERVICE STATE OF THE	-	-		-	-	-	1340	Lots 1-5-1, Morand Malaylas, ory CSV &s	36	\$200 (per residu)
	Coppey State (C.S.	-		•	-	*	-	Law 1-12 House Marries, or CV &	-	178 (or make)
	7 500	-		7	*	100	SLEET.	•		-
PEP Engineering (610) 481-7250	IIS Accounting Suffree	biograted	County index, accounts payable, county recording, areatory, payred, final payers	No	Xe.	Te	512K	K-	No	\$795 thical system.
DISTRICT THE PARTY NAMED IN	7900	-	Account probably common proble.	100	Tes	Te .	NA.	Later 1-0-1, Symplesy	Tes .	\$25,000-\$00,000 (cond.grams.com)
Passes Information Services Corp. 303) 790-0060	Integrated Business System	Integrated	General indger, accounts payable, accounts recomplib, ignostery, report writer, på contag, order extry,	Yes	Yes	No.	SLEE		Yes	\$275-8900 (per mediale)
pon ber 1234	Personal Control of the Control of t	-		*	~	The .	198E	Lottes 14-9, Andrews Tells Disson II, say ARCE, STLE or DIP do	No.	2000 basi man
terriseft, Inc. 8001 683-0800	Date Accounting	integrated	General ledger, accounts populity, accounts recornible, growing, payment,	Tes	×-	Tes	Transverto	Aginton-Tate Proporevert	Yes	\$495 fintal system cost)
Andreas Self-self	Parent Square	100		-	1-	74	***	Aug ABCD Str.	700	2000-2000 (par mobile)
1001 321 4916	MAI Integrated Accounting secon		General Indiger, accounts payable, accounts recomplete, assessing control, payrod, order ontry, cales manyon, famous apparages, fixed march, famous apparages, fixed march,	Yes	Y-	Yes	256E, 336E (report witter)	Any ASCEL DOF or CSV	Te.	\$345-\$295 (per module)
Propositions, Inc. 1900) 548-0744	Company Magic	Methier	Count hips many parts.	20	100	7-	1546	No.	No.	\$1,000 (seed spin-
Q. W. Page Associates, Inc. 4151923-4567	Newstern	Integrated	Consent integer, accounts popular, accounts receivable, work-to-progress reports, cath flow, believe above, secure adamsest, payered, date pad billing, sales and order patry, job conting, consolidations, client write-ups	Yes .	Yes	Ta	512K	Arry ASCE for	No	\$495 Outal system cost)
201) 200-1212	Count Leaving	Metable	County Indge, seconds jupidie,	10	To-	No.	364	Optional	Sm.	Up to \$4,000 (per
Realworld Corp. 1800) 288-1118	Resident's Accounting System	Mobile	County beign: accounts payville. accounts recovering payville, order entry and billing, arresting control, make analysis, più carting, parchase orders.	Te	Tes	Tes	1548	Letter 1-3-3, may ASCIS Size	Ye.	\$695 (Lotal system cost)
	4-In-1 Planic Accounting	Integrated	General Indiger, accounts payable, accounts receivable, payred	Yes	No.	Yes	254K	Aug ASCII Ga	No	\$595 Dotal system cost)
System Inc.	But They Assessed as Subsection	-		No.	T=	Tes .	2000	Letter 1-8-3	No.	136 toll (m)
Ross Systems, Inc. (418) 864-1100	MAPS series	Integrated	General indiger, accounts purplile, accounts recoverable, fixed masts, metalog, more laid, data base, crea- view	T-	1-	Te.	24	Auty Did? file	Yes	95,000-\$23,000 (p module)

COMPANY	PRODUCT	MODULAR OR INTEGRATED PACKAGE	STANDAED MODIAES. PUNCTIONS	OFFRE USER-DEFINABLE REPORT FORMATS	CREATES COMPARATIVE	PORTS RECURRING TRANSACTIONS	MINIMUM MEMORY REQUIRED (IN BYTES)	HTESACES WITH EXTERNAL SPEEADSHEETS, DATA BASES	OPPERS MULTIUSER CAPABILITIES	2044
S & S Programming, Inc. (317) 423-4472	CPA.	Modeler	Geograf Indiger, accompting payments, accompting controlled, prior extry, fundamentary, payment, beinger cash flows,	Yes	Yes	No .	2568.	36	Yes	\$496.3000.(per metale)
58T Corp. (415) 331-9900	Data Base Accounting Library	Modelar	enterprise teleptal.  General indiger, accounts perside, accounts receivable, permit, time and falling, sales under preventing, billing an armetizary control, permit, salests, pile on accounting, claric writing, property, mondulationing researce placeage.	Yes	te	Tes	512K	Auton-Tate Disse III, Framework, Let as 1-2: Microsoft Multiples	Yes	\$95-\$595 (per module)
San Lois Software, Inc. (801) 466-6505	TARG	Modelar	General Indger, presents recorded, acresant payable, payred, miner and saldress, servetary control, point of min- mendiard preventary, multiplication presenters. Not and mine continuous	Tm.	-	-			Yes	9900-82,100 (per module)
Sensphore, Inc. (212) 697-1196	Senaphore Ferences Manager	Modular	General ladger, accounts popular, accounts recorrelate, yet coming, filescon- analysis, hadger	Yes	To	Yes	256K	Any ASCII für	Yes	\$100-\$500 (per module)
Storm Co-Line, Inc. (200) 683-6466	Mac One Write	Medde	General telger, amounts receivable, and	Ne	Ns	Tes	\$12K	Microsoft Facel, Makester, Lutter Inco	Yes :	\$50 S6 (per mobile)
Seftsync, Inc. (212) 685-2080	Acceptant Inc. (Commodure 128 reman	Motular	Grantal ledger, accounts payable,	No	No	Tes	128K	No.	No	\$99.55 Cotal croten
	Accountant lier. (Macetonb version)	Imagrated	General Indger, accounts payable, accounts recornable, greenay, financial	No	Yes	Yes .	512K	Arty ASCIL Sie	In developmen	e \$299.95 (kotal system cost)
Springs, Inc. (200) 554-0045	Construction System	Modder	count interview accounts payable, accounts receivable, payed, job coming, investory	Tes.	Ten	×	mgK .	Letter 1-3-3, Compreser American Superral, Anthro-Tree Dann DI, and DP Se	Yes	\$2,000 (per mobile)
Software Technology, Inc. (402) 423-1440	TABS III	Madde	General Inform, accounts payable, trust	To	Yes	Tes	192K	Any ASCE Go	Yes	\$300-\$2,500 (per mobile)
Systems, Inc. Systems, Inc. (1980) 228-2200 (1980) 762-7780 (in Callil.)	Accounts	-	County being recently proble. Account resirable, side orders, purchase orders, equalitating interac- count, than all little, that accounts, advantable, by many, areas,		10	1	REE		7-	\$185-\$1,195-(per models)
Southware Innovations, Inc. 1800) 547-4179	Soothware Business series	Modular	Control brigar, accounts payable, accounts recognise, percel, expenser.	Ten	Tes	Tes	256K	Any DOT file	Yes	Contact vendor
Aprile 100	According Partner Plan	-	mire County below with shall writing accounts receivable with armoving, accounts provide with shall writing and	Su .		-	-	Programmy, any ABCE or DR Re.	No.	STITE Datal system
	Accounting Partner	Medica	Course below mentals provide	Te .	Tet	No .	14	ANY ASSESSMENT	No	909 Danid Andreas COAC)
Sinte of the Art, Inc. (800) 854-3415 (800) 423-3151 (in Calif.)	MAS 20 Master Accounting series	Moduler	General indger, accounts people, accounts receivable, people, eventury transportant, raths order processing, parchase order processing, bank recensive codes processed, bank recensive and analysis, library model.	Ten	Te	Tes	602K	Lettes 1-2-3. Authora- Tatic Disser III and comput bies	Yes	\$785 (per module)
Systems Plea, Inc. 416) 988-784Y	Double Entry	Mohier	Control belger, acresite perside, accounts recorded, proteing, persid	No	Tes :	Tee	254E	No ?	No .	\$605 (per medials)
ICS Software, Inc. 8000 231-6454	TCS Total Accounting System	Motaler	General ledger, accounts payable, accounts receivable, sales order entry, researcement final counts in country.	Yes	Tes	Te	256K	Lotus 1-2-3, Symphony, Microsoft Multipliae, say ASCII file	Yes	\$595-\$795 (per module)
10M Seltware, Inc. 3060 344-7022	TOM Software Commercial System	Modeler	payrid, parchase orders  Central Indger, accounts payable, accounts recorded, payrid, fixed passes, parchase order, order entry, avoiding	Yes .	Tes '	Yes	SAE .	Proprietary	Yes	Coutact weather
Systems, Inc. 804) 346-1   00	Doorses Management System	Modular	General Indger, accesses payable, accesses recorrable, payroll, labels	Tes	Yes	Yes	128K	No.	Yes	Contact wonder
Terroughbred Software division of Concept Omega Corp.) 8001 624-0430	Theroughbred Accounting System	Marketer	Coveral indiger, increases payable, accounts receivable, fined amone, payentle, purchase orders, order processing leakes malyals, investory control?	Yes	Tes	le l	296K	Proprietary	Ten	\$595-\$796 (per module)
imberiose Software, Inc. 503) 626-6775	Medallon senes	Modular	General ledger, accounts payable, accounts recovable, seventury and payred.	Yes	Tes	No	512K	Lotus 1-2-3. Ashtree Tate Dhase, any ASCII or SYLK file	Yes	From \$625 (per module)
vec Lice Sofregre, Inc. 2009 TRACLIN	Integrated Accounting	Integrated	General ledger, accounts psychie, accounts receivable, order eatry, falling, providency, inventory related, raise analysis	Yes	Yes	Yes	2548	Lotus 1-3-3, my ASCS She	Yes	\$1,695-\$2,995 (soul system cost)
	Protect Costroller	Integrated	Constraint accounts persial, accounts receivable, cash fire, spice accounts receivable, cash fire, spice	No.	Ten	Tee '	254E	Lotus 1-0-3, my ASCII Sin	No	2596 Cortal systems cost)
ortical Business Software, Inc. 890: 432-4305 D14) 632-4305 (in N.T.)	wites	Integrated	accounts payable			Ten -	256K, S12K (Macintook)	No.	No	\$750-toxal system cost.)
	senies with lavoratory Control	linegrated	General belger, accounts payable, accounts receivable, providing, purchase order, recurs, price quote				256K, 512K (Macestell)	No	No	\$500 Octal system (Net)
Rebits Sefroury Corp. 310) 004-0464	Petrolinan Account	Makey	Control index, accords psychic accords recording and attribute, parted, resonan declaring, presentant, projection verification, hour decapations.		-		RUE	Any ASCIL DOF or STLK	Ten	2016-\$1,210 (per mobile)
forthriew Software, Inc. 110) 860-1616	The Dollar Manager	integrated	Consertal lendgar, accounts payable, accounts receivable, payonal, seventury control, estimating and sevencing, hashing, time billing	Yes	To 1	Ke .	1268	Letas 1-3-3, any ASCII file	Yes	\$1,290 (total system cost)

# The way beyond Babel.



Imagine trying to build a railroad system if every locomotive manufacturer used a different track gauge. And each local stretch of railroad had a different load-carrying capacity and its own unique set of signals. The business of

moving and managing information is in a similar state today Machines can't always talk to each other. Proprietary systems and networks abound. And the enormous potential of the Information Age is being dissipated by incompatibility.

The way beyond Babel lies in setting firm, far-reaching standards. In developing products and services that conform to those standards while establishing new standards for higher-level functions and applications.

The process must be continuous. Dynamic. And cooperative. We must share our visions, technical approaches and experiences. AT&T is committed to that course.

Our involvement in the evolution of ISDN (Integrated Services Digital Network) is a good example of this process at work.

AT&T works closely with national

and international coordinating groups to establish standards through consensus and insure that they are consistently interpreted.

Where standards are firmly established, we've developed products and services that conform to them and address a broad range of customer needs. From woice data work stations and ISDN PBXs for business to central office switches for Operating Telephone Companies.

Wherever possible, we've also shared the benefits of our experience, as we did in a recent Chicago test where, in partnership with Ameritech's Illinois Bell, ATAT began the nation's first customer application of a production ISDN system for

McDonalds.

We must, as an industry, continue working together to provide our customers with maximum flexibility and utility. Then they can decide how and with whom to work.

Once we've taken those important steps, we foresee a time when the promise of the Information Age will be realized. A time when people will participate in a worldwide Telecommunity through a vast, global network of networks. A merging of communications and computers which will enable them to handle information in any form—conversation, data, images, text—as easily as they make a phone call today.

Telecommunity is our goal.
Technology is our means.
We're committed to leading the way.





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- What it's like to work as a cooperative marketing partner with DEC.
- Wrap-up and analysis of products DEC introduced to the market in the last 12 months.
- Contrast of users who have jumped from IBM to DEC versus those who have jumped from DEC to IBM.
- ■DEC's penetration of vertical markets-and subsequent status in those markets.

This how to on dealing with Digital Equipment Corporation has much to say to DEC customers. And since you do, too, you're in a perfect position to take advantage of a built-in audience of DEC-involved professionals.

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#### COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

#### F W Local-area network hardware

Lanex has unveiled its personal computer-to-broadband inter-face, the Model PC588. The IBM Personal Comput-

er-compatible device is an intelli \$250. gent interface board that is said to allow PCs to communicate via a broadband local-area network (LAN). The PC interface utilines forms a variety of function Links ranging from terminal emulation to file transfers, as well as printer and disk sharing through an IBM Netbios interface. The LAN ac-An asynchronous remote bridge said to connect multiple remote protocois are consistent with IEEE 802.3.

The PC interface, Model PC588, costs \$695. Lanex, 10727 Tucker St., Beltsville, Md. 20705.

American Photonics, Inc. has introduced the RL3000 Ethernet transceiver featuring diagnostic capabilities, activity indicators for network monitoring and a oser-selectable heart-

The RL3000 is said to provide access to Ethernet localarea networks for transmitting

allows one connection and a mul-time version that allows up to and receiving data packets in IEEE 802.3 and Ethernet Verfour concurrent connections. sion 2.0 specifications for Carri-er Sense Multiple Access/Colb-

0 0 11 C T 5

American Photonics.

ts (LAN) to a local Network

lows remote personal computers

Features include transparent op-

eration and a traffic sensing

mechanism that drops a line that

has been quiet for a specified

be available in the third quarter

The product is scheduled to

It uses asynchrone

ngth of time.

The single-line bridge costs \$395. The multiline bridge costs sion Detect operation at 10M bit/sec. The RL3000 can inte-Novell, 122 E. 1700 South, Provo, Utah 84601. ate with either thick or this

thernet coaxial cable.
The RL3000 is priced at CXI, Inc. has announced five local-area network (LAN) workmicro-to-mainframe ications packages for Commerce Drive, Brookfield Center, Conn. 06805.

IBM Personal Computers and Personal System/2s on LANs rsonal System/2s on LANs upped with CXI's PCOX coaxial and remote gateways. The packages support both IBM's Netbios and Novell, Inc.'s SPX LAN interfaces. Users can run IBM 3270-based applica-

LAN over telephone lines has been introduced by Novell, Inc. The Netware Asynchro-nous Remote Bridge also aland transfer files to and from the PCOX/One provides IBM 3278 and 3279 terminal emulation with one host and one DOS to access a local Netware LAN. costs \$150 PCOX/Two allows users to run support speeds to 19.2K bit/sec. a personal computer printer that emulates an IBM 3287 printer

while working on a host session. It costs \$200. PCOX/Multi rovides concurrent access to er host sessions, it must \$275 the features of an IBM 3179 G graphics display terminal. It costs \$295. PCOX/Multi-APA allows the user to run up to four display or printer ses-sions along with one APA graphics host session. It costs \$395. CXL 1157 San Antonio Road Mountain View, Calif. 94043

#### Diagnostic equipment

A built-in RS-232 con cations feature for its portable DW300 Channel Monitor has been announced by Data/Ware rvelopment, Inc.
The RS-232 feature allows

tions, access mainframe files, save the contents of host screens

the DW300 to be used by field service engineers to diagnose I/O channel faults detected be-tween IBM or plug-compatible

mainframes and their peripheral controllers from a remote location. The user can view a complete replica of the DW300's front panel on a personal com-puter or terminal display screen. The keyboard allows the user omplete remote control of the DW300 located at the mai

The basic DW300, including the built-in RS-232 communications feature, costs \$11,995. Data/Ware Developm 204 Sorrento Valley Blvd., San Diego, Calif. 92121.

A multi-LCN emula package used to test loading and throughput on CCITT X.25 communications links has been announced by Digilog, Inc. for use with its Digilog 800 Protocol/Performance Analyzer

Features of the pockage in clude the ability to emulate up to 4,095 logical channels on any X.25 port, routines that check the loading or usage of all logical channels: and the ability to test X.25 links. Statistics provided include number of active channels, number of data packets sent or received and number of packets transmitted per second.
The software is available on

diskette for \$300 Digilog, 1370 Welsh Road Montgomery, Pa. 18936.

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involved Compare for yourself and find out why power-users like Autodesk and Relational

Technology use LaserScript to compose their technical





#### DOS, OS, or CICS Frustration?

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system. BM presents a line of proven programs that maximally your system's capabilises, saving you time, labor and expense. Those program products help get the most out of your system.

IOW — Multiple terminal ses RT under DOS or OS VTAM T — The adres with more than more than 25 storrificant leatures that

The Control of the Co BBI programs are cost-efficient, some less than \$000, highest \$4000 Yo, can see even more with our group package offerings. Products are axiat on permanent, annual, or monthly locates, and shipped on a 30-day free trial basis. Product documentation is 2-efficient on equalities.

BM elso performe systems programming consulting, with condultants in Minimapoles and Washington, D.C. Computer time services are elso available on our 4331-2 system, on-see or remote. B I MOYLE ASSOCIATES, INC.
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Minnespolis, MN 55436 612-933-2885

# SYSTEMS & PERIPHERALS



# James Connolly Name of the game

There is a new game in town known as "The Early Shipment "and the winners, playing with a stacked deck, can only puter vendors.

The game is simple. For ex-imple, in January or so a vendor introduces a product and says it will be available during the third quarter. Then, in May, a press release and a flood of sales representative calls to customers trumpet an announcement that the product will be shipped ear lier than originally sche The spiel continues with the proclamation that developm roceeded faster than expected and all of the vendor's loyal em-

ployees worked extra hard to get the system out the door nths ahead of sched With the advanced schedule. the system will ship in July rather than during the third quarter, the vendor boasts. One question should be raised, how-ever; Since when is July not part of the third quarter on a Grego-

players in this game during the Continued on page 52

# Aging PDP-11s get kickers

MAYNARD, Mass. - Digital Equipment Corp. recently an-nounced enhancements for several members of its PDP-11 series of minicomputers, including

storage options.
DEC officials said the announcements represent a dem-

onstration of the company's commitment to the 17-year-old The introductions include the PDP-11/84E series, which is

based on the existing PDP-11/84 CPU and a nine-slot back-plane. DEC said the PDP-11/84E is the first series of PDP-11/84s to support a 5¼-in. form factor. It is also available in a 10½-in., 27-slot box. DEC said the enhancem to provide the basis for a build-ing-block approach to system

configuration DEC also as decrease in the basic monthly

11/84 systems. PDP-11/84E prices start at \$16,000 for the 5%-in. box and \$20,000 for the 10%-in. box. Prices for typical systems con-figured with multiple DEC RA series disks, DEC TU series tape drives and 32 to 48 terms lines range from \$55,000 to

ced the A-to-Z Business System, which is a packaged system that includes a MicroPDP-11/S3 processor and A-to-Z systems and applications software designed to run under DEC's VMS operating system. Four configurations are avail-ie, each with a CPU in a desk-

slashed the operating system price on a MicroPDP-11/83 by 57%. Entry-level prices for the MicroPDP-11/83 now start at able, each with a LPU in a desa-side enclosure, 2.5M bytes of memory, a diskette drive, a Wan-chester disk drive, six asynchro-nous lines and licenses for DEC's A-to-Z Base System, A-to-Z about \$25,000 with a CPU, a floating-point accelerator, a 159M-byte disk drive, a 71Mbyte tape drive and eight asyn-

# Intelogic discounts service

BY STANLEY GIBSON

SAN ANTONIO - Moving from its base in personal computer maintenance to larger systems, Intelogic Trace, Inc. recently announced discounts of 40% below IBM list prices on maintenance of IBM's Sys-tem/34 and 50% discounts on IBM'a System/36 maint

are price cuts. DEC The firm said the discounts are available in 28 major metropoliten areas. It also approunced a guaranteed response time of our hours for customers located within 25 miles of an Intelogic Trace service office in the same 28 major cities. Customers between 25 and 50 miles away can receive appraintend response for the next half of the business day,

Intelogic Trace said. In 54 smaller cities, Intelogs Trace guaranteed service with a half business day and said it will offer 30% off regular IBM maintenance charges for System/34 and 20% off System/36 prices.

# Continued on page 54

• Esprit ASCII terr

aimed at multiuser PC envi-ronments. Page 52. • Zetaco unfuris memory es for DG proces Page 56

## Data View Internal throughput of IBM 4381

- 1		- C		· 2		Processor.
1.4	1.4	13	13	1.5	1.5	11-81
2.0	2.0	1.9	LS	22	21	11-22
1.6	1.6	1.8	1.7	1.7	1.7	12-23
1.3	1.3	1.3	1.3	1.3	1.3	13-23
1.3	1.3	1.3	13	1.3	13	14-24
TORRE	PORNATION PRO					

# 386 add-in targets VAX

Electronic Mail and A-to-Z Su-percomp-twenty software. The

configurations range in price from \$14,788 to \$19,765.

The company also introduce the MicroPDP-11/S3 Plus sys

1M byte of memory over exist-

ing 500K-byte models. It was

designed to improve perfor-mance by 25% for the same

price as a similarly configured

m \$14.500

icroPDP-11/53. Prices start

DEC also announced 5% to

15% price cuts on MicroPDP-

11/83 systems. In addition to the

BY DAVID BRIGHT

GLENDALE, Calf. - The Intel Corp. 80386 microprocessor and Digital Equipment Corp.'s VAX family may seem like an unikely combination, but Avalon

Computer Systems has designed 80386-based add-in box

# SYSTEM 2000 DBMS for Only \$12,000

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You don't have to spend a bundle to get a full-function data base management system. For a first-year fee of \$12,000, SYSTEM Z000\*DBMS gives you:

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Box 8000, SAS Circle Cary, NC 27511-8000 [919] 467-8000 Telm 802505

# ASCII terminal targets multiuser PCs

BY ALAN ALPER

MELVILLE, N.Y. - Esprit Sys Inc. recently unveiled as ASCII terminal optimized for multiuser microcomputers pur ning Microsoft Corp.'s MS-DOS

Called Oous PCT4, the terminal is said to allow users to access applications on IBM Personal mouters. PC XTs. ATs or npatibles as well as on all Intel Corp. 80386-based micros. In addition to MS-DOS and Xenux.

tems, including Unix/DOS, Pick Systems' Pick, Novell, Inc.'s Advanced Netware/286 and The Software Link, Inc.'s PC MOS/386 Like many ASCII terminals, the Opus PCT4 emulates a range

the Opus PCT4 is compatible of popular displays, including with a variety of operating ses-

50, Televideo Systems, Inc.'s Televideo 920/925 and Digital Equipment Corp.'s VT 52. In addition, the terminal's keyboors and display emulate the IBM PC user interface. The Opus PCT4 offers dual

connection through the same host running different sessions or separate hosts. It also enables users to hot-key between any

two emulations or betw terminal and standard ASCII dis

In its PC mode, the terminal is said to duplicate the complete IBM 256-character font set. keyboard layout and PC codes. It also uses the 25th line for display rather than status purposes

ngle-stroke atoroge The terminal also features remote dial-in capability via Hayes Microcomputer Products, Inc. or compatible modems, Included in the terminal's pop-up window is a utility to store and dial computer numbers using a single keystroke. Esprit said it has made the pop-up window acces sories standard on its most re-

Priced at \$649, the Onus PCT4 will begin shipping to Esprit's resellers at the end of the onth, according to Sal Lanuto director of marketing. The terminal is covered by the firm's 24-hour replacement service by

The advent of true multiuses operating systems for microcomputers such as Digital Re search. Inc.'s Concurrent DOS and Xenix has created a market niche for ASCII terminals makers to fill. Lanuto said. Esprit will compete with Kimtron Corp. and Wyse's Link, Inc. subsidiary in the marketolace, he added

# Stacking

past year or so has been IBM, although it has not been the on vendor using the strategy. IBM has played the game with its 9370 minicomputers.

The 9370s were introduced in October 1986, with deliveries scheduled for third-quarter 1987 for the 9373 Model 20 and 9375 Model 60 and fourth quarter 1987 for the 9375 Mod el 40 and 9377 Model 90. In March, IBM advanced those dates by "up to two months earlier than previously

planned." This brought delivery up to July and October, respectively - still the third and fourth ouarter that were in the original announcement.

Of course, there is no blood shed in the advanced delivery game; it isn't serious enough to nock someone out of business. Home terms such as "fourth quarter" gives vendors a three month window to work within rather than the 30 days they would be boxed into if they named a month in the original ancement. However, the public's intelligence is insulted when vendors make it sound like they are doing custom favor when they are really just living up to their promises. And there is no shame in doing that

editor, systems & peripherals.

## SCIENCE / SCOPE®

The HR-3000, a new generation version of the Hughes Air Defense Radar (HADR), can detect and precisely locate fighter-sized aircraft more than 470 kilometers away. The phased array radar is designed for air traffic control in peacetime and can automatically detect wartime threats that appear simultaneously from several directions, even in the presence of heavy environmental clutter and severe mic interference. The HR-3000 system is in full production at Hughes Aircraft Company and will be used in Portugal and integrated with Hughes-built NATO Air Defense Ground Environment (NADGE) in Italy, Greece, and Turkey.

A two-way television system enables Minnesota students to be taught by teachers miles away. A consortium of seven school districts in east-central Minnesota operates this system in conjunction with local cable television operators as part of an elementary and high-school program to promote telecommunications technology in education. It allows each district to produce and transmit live video and audio signals to other schools. Thus, specialized classes such as foreign languages and advanced mathematics and science are shared among the seven districts. The system also allows administrators to attend regional meetings without traveling. It consists of a microwave path from Cambridge to six outlying school districts 6 to 26 miles away. The microwave transmitters and receivers were manufactured and provided by Hughes

U.S. Army's Fiber Optic Guided Missile (FOG-M) uses a new winding technology to deploy its plastic-coated glass fiber. This fiber permits a two-way jam-proof communication link for transmission of television-like pictures of enemy armor and helicopters to a gunner station located in a protected position. Using technologies learned from 20 years of producing Tube-Isunched, Optically tracked, Wire-guided (TOW) missiles, Hughes engineers developed a method of precisely winding optical strands so that they can be dispensed at missile velocities without interruption of the data transmir Because the optical fibers are not much larger than the thickness of a strand of human hair and are elastic and pliable, Hughes invented a device which precisely measures the elasticity of each fiber thus allowing it to be spool-wound with precision. Another Hughes technological advancement is a diagnostic instrument that detects defects in the fiber.

Upgraded flight simulators will depict mission imagery realistically for U.S. Navy F/A-18 pilots. Hughes is modifying its Weapons Tactics Trainers (WTT) to project high-resolution, full color, realtime simulated images of terrain features and man-made structures on 360-degree field-of-view don screens that surround the trainer's cockpit. The out-the-window scenes will be produced by advanced computer imaging technology, using a digital database that represents 70,000 square miles of western Arizona and southern California terrain. The new simulated visual system will allow pilots to safely practice a host of complex combat scenarios without expending fuel or weapons.

Hughes' Santa Barbara Research Center has openings for qualified applicants experienced in engineering management or Space Flight Assembly organization. Your department will be responsible for assembly process development of high-quality space focal plane assemblies. If your career goals include manpower planning, resource allocation, and facilities and capital planning, contact the Santa Barbara Research Center, Professional Employment, Dept. S3, 75 Coromar Drive, Goleta, CA 93117. EOE. U.S. citizenship required for most positions.

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# Intelogic

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ils to respond within the specified time, maintenance for the ment to be serviced will be ded free of charge to the

ets had b 15% to 20% below regular IBM

maintenance prices for Sys-tem/34 and 36, said Roger Grant, vice-president of market-ing and sales for Intelogic Trace. In February, IBM slasher ice pri 20% for System/34 and 36 and 12% for System/38. In the fall of

1986, IBM announced its Corpo-rate Service Amendment (CSA), a discount program under which users can gain up to 33% savings by showing they normally handle some service problems them-

For the little guyz Grant claimed Intelogic Trace's both small and large users, but

be said IBM's discount program is aimed solely at large custom-

Grant also pointed out that under the Intelogic Trace plan, no maintenance duties are being handed over to the customer, as they are under IBM's CSA. But Grant also said that customers with help desks and problem-

of an unspecified amount. Grant said the Int Trace disc nts signify a gre emphasis by the company or minicomputers and departmen

tal systems Dotopoint provider
The former maintenance wing of
Datapoint Corp., Intelogic Trace

in the major maintenance provide er for Datapoint equipment. The company has been ser-vicing System/34 and 36 com-puters for about eight months, according to Grant. Intelogic Trace also services

the equipment of major local-area network vendors and maintains System/38 processors in some areas, Grant said.

## Add-in FROM PAGE 51

that it said triples the speed of DEC's Q-bus-based systems. Intended primarily for value-added resellers of DEC's Micro-vax, the AP/20 Attached Processor increases a machine's performance by running compute-intensive programs off-loaded from the DBC host.

What we're doing is provid ing a way for Microvax users to build themselves a parallel com-puter," said marketing director Ross Harvey. He said programs that typically degrade system performance, such as large For graphics and simulation soft ware, will run much faster on the AP/20 by taking advantage of the 80386 chip's native 32-bit

provides better performance than the addition of a DEC floating-point option would. He said the board can run general-pur-pose programs, and performance can be further increased by adding several AP/20 boards.
According to Harvey, pro-

grams for the AP/20 are written and executed in the same manner as host VAX programs. To run on the AP/20, program need only be recompiled with Avalon's C, Fortran or Pascal compilers, he said. The board's proprietary operating system runs the computational parts of a program while transferring I/O functions to the VAX, Harvey said. "The program still thinks it's running on the VAX even though it's not.

The board's software currently does not support Micro-soft Corp.'s MS-DOS operating

The board's \$10,000 price indes the operating system kernel and 4M bytes of random-access memory. An optional Weitek Corp. floating-point chip set is \$1,900. Harvey said the board has a socket for Intel's 80387 math coprocessor, but that the Weitek chip set is faster.

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# N E W Processors

An industrial image processing subsys-tem designed for the VMEbus has been announced by Matrix Electronic Sys-

The MVP-VME provides such func ens as real-time convolutions, morpho

gical transforms, pattern matching and feature extraction.

The three-board set features 12-bit monochrone display, a memory-mapped frame buffer and nondestructive graphics

The MVP-MVE is priced at \$5,995.

ODUCTS

transparently to the TS11 and TSV05 software driver contained in the operat-Matrox, 1055 St. Regis Blvd., Dorval

The DQ152 contains a 64K-byte data buffer and features a drive transfer rate of 1.25M byte/sec.

The coupler costs \$1,400. Distributed Logic, P.O. Box 6270, i55 S. Sinclair St., Anaheim, Calif. 1555 S. Sinclair

A W-in, magnetic tape coupler said to im-plement Dujital Equipment Corp. TS11 and TSV05 emulations has been intro-duced by Distributed Logic Corp. for use with the DEC Microvax, MicroPDF-11 and ISL11 computers. Three add-on memory modules designed for Data General Corp.'s MV/4000, MV/10000 and S/280 processors have been introduced by Zetaco, a

ary of the Carlisle Corp. The printed-circuit boards install in the DG computer chassis and are available in three capacities: Model MZ-412

adds 2M bytes of memory; Model MZ-414 adds 4M bytes; and Model MZ-418 adds 8M bytes.

The memory modules support 7-bit on-board error-correction code and use a 256K-byte, 150-nsec dynamic random-

The MZ-412 costs \$3,995; the MZ-414 costs \$7,495; and the MZ-418 costs \$12.495 Zetaco, 6850 Shady Oak Road, Eden Preirie Minn 55344

A multifunction controller designed to in-terface 5%-in. optical disk drives to the Digital Equipment Corp. Microvax II has been announced by Scientific Micro stems, Inc.
The SMS 0109 controller is said to

provide a small computer systems inter-face port that allows an optical disk drive to be attached to any Microvax II running standard DEC VMS software.

The controller also supports two fixed Winchester drives and two floppy drives, the company said.

The vendor has also introduced Optical System Software, a software utility and set of callable software routines that re-portedly allow the VMS operating system unicate with the write-once read

The software costs \$2,000. Scientific Micro Systems, 339 Ber-ado Ave., Mountain View, Calif. 94043.

## Printers/Plotters

A universal subsystem adapter for Data General Corp. systems, said to drive any Xerox Corp. centralized electronic print er, high-speed Hewlett-Packard Co. printer or IBM 3800 series laser printer, has been announced by Spur Products

The USA/Data General also drives the IBM 3211 high-speed impact printer

and other laser printers that emulate the 1, the vendor said. The printers are said by Spur to offer erating features such as unlimited type fonts, type sizes ranging from four to 24 points, variable line and character spac-ing, variable page length and width and the ability to print on both sides of the pa-

The rack-mountable USA/Data Gen al costs \$9,000. Spur Products, 13469 Beach Ave., Marina Del Rey, Cair. 90292.

NEC Information Systems, Inc. has introduced the LC-3000 series of laser

printers The LC-3300 features 30 page/min tput and 300 dot/in. resolution. The LC-3400 offers 22 page/min out-

put at 400 dot/in. resolution. The printers, designed for multius environments, provide output on sheets up to 11- by 17-in. in size.

They feature a standard video inter-face, dual 250-sheet paper input cassettes, a 250-sheet output tray and a 20-sheet manual feed guide, according to the

NEC controllers are said to provide se rial and parallel interfaces as well as page description languages and support for Di-ablo Systems, Inc., Epson America, Inc., lewlett-Packard Co. and Dataproducts

ro, command code ices start at \$10,995. NEC Information Systems, 1414 Mastts Ave., Boxboro, Mass, 01719.

Nixdorf tames the data entry tiger.

features for adding peripherals to Q-bus

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11 and LSI-11 con The DQ152 tape cou very large-scale integration circuit that provides device-independent interface



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# IN DEPTH

# Is the competition ahead? Then leapfrog them

The chief technology officer as innovator and integrator

# BY DIMITRIS CHORAFAS

In the coming decade, the chief technology officer will play an important part in business, inclustry and finance. He will deal with the chaotic state of many computer and communications installations, healing the wounds that result from un-

planned integration of incompatible systems, devices and services. Providing for efficient links is also an urgent task, one vital to the organization's survival; this, too, will fall into the chief technology officer's realm. The less precise title of chief information officer generally in-

dicates a high-level executive in a financial services or manufacturing organization responsible for integrating information and knowledge within the organization. This title, however, goes beyond the role of integrator; it includes duties expected in the

tion has been placed on the devices in use rather than on how technology could be used to better the organization. The results of this imbalance are obvious in the difficulties office automation created for many DP organizations as well as classical DP's inability to reap from what it had at its discossel.

While the effective implementation of new technologies requires a more conceptual than analytical mind, this does not ex-

Chorafas is a business consultant and author living in Saint Laurent D'Eze, France. His books include Interactive Workstehrens, The Handbook of Data Communications and Computer Net serks and The Software Handbook



clude those with DP and MIS backgrounds from becoming the technology officers, as in the cases of Carmine Vona at Bankers Trust Co. and George DiNardo at Mellon Bank NA. Nothing guarantees that good DP managers will reach the top,

train demiseries in new victuals orgies throughout their careers. Success as a chief technology officer calls for a person with an open mind, a person of vision who can be astisfied with only the best. The person is this position must be ready to abandon old, trusted paths and take risks. Chief technology officers must be people of stature and recognized leaders in their fields. As

full-fledged members of top management, they should be able to explain to their colleagues the strategic directions of technology and to demonstrate how these strategies affect the com-

pany's business. An chief technology officer should be a poscetter, not a day-to-day operator. For example, the intervention of the chief technology officer at Sanyo Securities Co. in Tolyo was instrumental in the firm's use of computers and communications to reduce back-office support to fewer than one worker per securities.

er securities houses use an aver-

age of two people to support

each sales representative.

Samyo Securities' chief technology officer has also been the impetus behind large-scale adoption of All no desire operations. Of the three-dozen banks and secrity houses! Visited during 1986 in the U.S. Japan and Europe. Samyo Securities is by far the most successful in implementing results of the control of the control

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in high technology at the board director level — as well as in executive management — as well as in executive manage-ment — is still limited. Yet hardly a bank-ing product is offered today that does not require a significantly high degree of automation. Technology plays an important role in banking. Although the modern bank has been said to be "information in on." the motion is not achieved with

technology.
Technology also gives rise to new nking products. At a banking sympo-m in Paris in June 1986. Francois Pasquier, general manager of Banque Inter-nationale de Placements in Paris, said 35% of his bank's business results from products that did not exist 18 months earproducts that did not exist 18 months ear-lier. It takes technology — not just information - to make a profit with new prod-

T TAKES technology - not just information - to make a profit with new products. A chief technology officer needs the technical expertise to nurture these products and bring them into play.

ucts. A chief technology officer needs the technical expertise to nurture these products and bring them into play. Forecasting, in many mendous amount of technology goes

into new product development. Increasingly, the new product development efert and a company's information systems merge. Today, the microprocessor is an integral component of many man-made

products. In a few years, products of dis-tinction will not feature only microprocessors and memory but will also show their petitiveness through AI constructs.

Determining the upcoming generation of intelligent man-made products reguires more than a polished information systems background. In the years to come, forecasting will be one of a chief technology officer's key responsibilities

The executive's conceptual abilities will range from research and development to

nge from research and development to stems design and implementation. Peer advising. The board of directors needs a colleague with whom to cor municate on equal terms, as does intern agement's executive While specialists in their own fields, board

members are not necessarily well-ver ology Currently, some leading-edge technol ogies — such as very large-scale integra-tion and optical storage media — are ca-pable of loosening a company's competitive grip if they are not incorporated into the organization. To face the challenge of these technologies and to capitalize on them — rather than expose the company's flanks — the board needs

the advice and assistance of someone with Enter the integrator Along with the role of innovator and con-

sultant, a chief technology officer must be an integrator. Systems integration needs to be an proached at the conceptual level. It does not occur simply by adding one, two or even a thousand interfaces. If MIS installs 65 incompatible physical networks, it will not be able to integrate them at the phys cal level through gateways or at the networking CCITT X.25 level.

As far as a chief technology officer is concerned, the critical problem in inte-gration is the management of partially un-derstood and poorly defined systems. Systems integration requires a valid concept, computer-aided design, a broad perspec-tive in implementation and flexibility for renewal and expansi

Integration solutions supported by computers and communications must be directed both into the firm and out toward its business environment. They should reach clients and suppliers and include es, up to direct client dial-up, factories; and all facets that come into play at the corporate level. Electronics should replace paper, with employees working online through terminals, come links and data bases.

Manufacturers Hanover Trust Co., like other organizations, has defined the integration role by instituting a new cor porate division: Strategic Research and Technology. Established at the corporate level and directed by the company's board of management, this function und scores the role of high technology in launching new banking products and improving existing products to make them

The division is split into the folio four main functions, each allocated to a

corresponding department. Technical research. This includes AI, data base machines and the setup of pilot applications within one or more of

the organization's five major operating dins architecture. This func tion's goal is to develop business plans for

nications as well as to establish fu e directions in systems directions Data base architecture. This is pri-marily a planning function aimed at loca-ing appropriate new tools and providing corporate policies for data base manage-

Policies and standards. This de artment affects all corporatewide tech-ological issues — both software and rare — and assures homogeneity



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learn about this data entry breakthrough. CALL 1/312/329-3320

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COMPUTERWORLD

JULY 20, 1987

roughout the different divisions.

A fifth department might also be in-ided in this list:

Technology planning. Objectives re should range from following up on new tools (particularly programming tools and packages) to technology transfer. Also included is market evaluation: How far along is the competition in re

Focus on strettegy
A company's strategy is its master plan
against an opponent. Other plans more
specific in function and more detailed in
nature are subordinate to it. Strategy is
specific to the industry in which it is apd and to the company it cor oals, resources, environment and organizational culture must be considered in

shaping strategy. Strategic planning must rest on three pillars: market perspective, human capi-

HIEF technology officers are not necessarily strategic planners, but they can contribute much to the strategic plan.

tal and modern equipment. Chief technology officers are not necessarily strategic planners, but they can contribute much to the strategic plan. They place information systems at the disposal of manag

valid management approaches for ad-dressing strategic and operational issues concerning computers and communica-tions. One key question constantly con-

frosting top management is, "What is our product line" The questions a chief technology offi cer can answer are, "What can technol ogy do for our product line? Is our use of technology making our products more appealing? Sharply cutting our costs? Giving us a competitive edge in distribution? In-creasing our products' reliability and availability?" For all these questions, the

strategic aspects have to be an For example, one multinational bank takes the following approach in looking to technology to gain the upper hand against

competition:

The banking industry depends on computers and communications for the development, production and delivery of its products. Therefore, the technical soluproducts. Incresore, the technical i tions that are developed closely con with the products and services that are of fered. Just the same, the products and services depend on the technical solutions that are available — or can be made avail-

 The change from a regulated to a nonre-gulated banking environment greatly af-fects competition. The strategic aspects have changed. The new opportunities for profit in banking services greatly affect the kinds of technology that can be used to give a bank competitive advantage. In addition, the technology to be adopted in-

ices both the perspectives and the ing of the organizational framework. Fith these two premises, the bank's top management analyzed the technologiorts that characterized the last erations of product strategy: the

second-generation product strategy — distributed data processing — of the early to mid-1970s and the third-generation

product strategy — networking and dis-tributed data bases — of the late 1970s to With this background, they took the forthcoming fourth-generation product strategy into consideration — a fully on-

In a regulated banking environment, e now-obsolete second-generation aking products and associated technology might have been fine. But such a mar-ket does not exist. The market today is dynamic and competitive. Because of its

ogy for survival. But it also requires ting the banking products to the mar-

According to the bank's analysis, if an organization is first in the market with a oduct and uses a fourth-generation oduct strategy, it can reap a good profit, will make less with a third-generation

ct strategy. It will lose money with a cond-generation strategy. If, on the other hand, there are delays

bringing the product out and resping its melits, then the market will pass the orustion by. Even a fourth-generation egy will show losses — at least a few s. Much more money will be lost with a third-generation strategy, and a secondon strategy will amount to being

This system solution exer implementation of corporate strategy. At the same time, the corporate strategy dees both the investment in and the na-

ture of the system to be d A chief technology officer is the innovator, the agent of change and the consul-tant to a chief executive officer.

Adapting to a new culture
At Nomura Securities Co. in Tokyo, the networking workstations throughout the gation. The goals of the new system sign were to develop the best solution ble for account executives, manage ers and other professionals and to integrate all information sources into one

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V-series technology will offer an X-25 PAD option to

further accommodate network environments of today And the future.



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## V-SERIES SMARTMODEM 2400

With adaptive data compression this modern can achieve an effective throughput of up to 4800 bps. Of course, it too offers point to point erici control, forward erior correction data flow control automatic leature negotiation and synchronous as well as asynchronous communications modes. And like the V-series Smartmodem 9000, it can link up with a wide range of networks, such as SNA, and be enhanced with an X.25 PAD option.

Vseries moderns come in standalone versions and internal versions iV series Smartmodem 9600B— and V series Smartmodem 2400B—). Internal versions are bundled with our powerful new Smartcom III—communications software.

And as yet another rebuttal to the argument for obsolescence, we developed the V series Modern Enhancer. A separate stand alone device that will upgrade current Smartmodem 1200 and Smartmodem 2400 external modems to the new standards set by the V series products.

A closer look at the V series product line will reveal to your a revolutionary technology designed to be the beneficiary of time, not its victim. So contact your Hayes Advanced System Dealer or call 800-635-1225 for the one nearest you.

Hayes

intelligent terminal as well as to merge in-house information and outside financial information and market data into one logical structure. All account executives are connected to the Nomara Securities network. Each employee has a personal multifunctional workstation.

functional workstation.

In network design, the goal is in a partial, near-sighted modifito achieve a single. Al-enriched cation of a paper-based debit 
solution. Physical structures will 
transfer system when the world

be integrated into it, but the top logical layer, currently under development, is universal. Decisions on the direction the implementation should take are necessary. In a banking environment, base questions might unclude the following:

a Can we really afford to invest in a partial, near-sighted modifi-

is moving swiftly toward satellate communications, interactive workstations and electronic mail?

mail?

• Can we afford to divert scarce resources for five to seven years to modify an already obsolete system when our competitors are learning to use electronics to deliver products on-line and increase customs service?

little low-return changes and pass up tive high-return opportunities with onic new avenues such as expert systems?

Trying to increase paper-processing efficiency by solving pseudo-problems and proiderating specialized changes that hold little appeal in the marketplace does not make sense. This view consists of unrelated fragments that, in a few years, will leave a

bank wondering what happened to its market position, its clientele and its profits.

A new culture is needed —

one based on high technology and the management of change. Chef technology officers shape. Chef technology officers shape agents. To be such, they should be instrumental in convincing their peers at the top management level of the wisdom of organizationwide computer litera-

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EMC<sup>2</sup> The System Enhancer

## Taking it from the top

when mace confide comparing iteracy programs unters at the top.
The chairman, precised at an 
members of the board should be 
the first to entherse it. The 
what the comparison will use every opportunity to educate its 
people — from chairman to partial 
Gray, former chairman to Julied 
Technologies Corp. efformostrated this point by being the 
first to take a comparin iteracy 
to 
the Bank Chairman and Chrif Exceutive Officer 5. David Barnes

to Bank Chairman and Chrif Exceutive Officer 5. David Barnes

did the same. To do this job ably, a chief technology officer must spend 100% of his time riding horses, not desks. To stay on top of technological advances and keep his personnel informed, his time should be spent as follows:

Visiting the vendors of high-tech products, particularly computers and communications

products.

• Meeting with top people of other organizations in the same or similar line of business.

• Talking to research personnel about future products.

 Attending seminars in order to learn from a lecturer who can offer perspective.
 Participating in conferences or symposia and being ready to exchange opinions.

Shared knowledge is the key to future growth. Free communication among technologists lubricates further progress. If communication is hindered, an organization's competitive edge will be dulled, and development will proceed much more slowly.

Logical resources are the foremost level of wealth at the end of this century. Logical resources differ from physical resources in one important way: The more we distribute them, the more we have.

For 15 years, I worked as a consultant to the chairman of a large financial and industrial group whose topmost priority was to focus on a given subject. He cared less about the decision than the process. He was convinced that not focusing on key subjects would eventually destroy the organization.

The role of a chief technology officer is now under scrutiny. How you implement it in your organization is your business. But the mission, I hope, is clear.

# MANAGEMENT



# MIS's paper investments

The story I am about to share with you is true. The names have been omitted to protect the innocent, the multy and the lucky This story is about a project that was on the ropes, so to speak. But with a small invest event in some very crude docuturned 180 degrees, becoming supportive, excited and willing

to pay the bill First, let's put the subsect of documentation in perspective. Do you consider documentation an expense or an investment? If it can make a difference in the cess or failure of a develop ment project, it certainly has notential value as an investment If it speeds up the training of the personnel responsible for the operation of the system,

doesn't that have a dollar value? Quicker recovery from system failures and outages cert can be translated into dollars. If one of your key employees quits left behind, the time it takes you to diagnose a problem could be embarrassing and maintenance costs could be high. Now for the story. For ma

years, the users had to work with some complex and unhandy batch programs to perform cer-tain calculations. Then a quick-Continued on page 68

# Managers playing the numbers

To gauge performance, MIS leaders target customer satisfaction measurements of DP quality and

BY DAVID A. LUDLUM Data processing managers plan to step up recently launched efforts to measure the quality and productivity of their systems. and they view customer satisfac-

productivity is not widespread but is noised for growth. The institute conducted the ever by polling 71 organizations that took part in its Nation al Conference on Data Process ing Quality and Productivity in tion as the best gauge, according to a survey by the Quality Assur-ance Institute in Orlando, Fla. Orlando last year. The institute noted that this group is probably more ad-

vanced in the field of DP mea-The results of the survey. through a formal program. ducted for the first time, sugements than are typical orga-The organizations reported eest that the use of quantit ons. "These are some of

unifies the largest corporations in th work force country, the Fortune 50-type companies," said William E. Per ry, the institute's executive di rector. "It's not representative

BY JEFFRY BEELER of the community. They came to a conference on the subsect Among the respondents, 55% SAN JOSE, Calif. - In a move aimed in part at improving intersaid their organizations make quantitative measurements of personal communications, the DP quality or productivity owner of the Tymnet public data

Tymnet

nuncations service is em barking on a consolidation of its facilities in the San Francisco The process is set to begin this week when McDonnell Douglas Network Systems Co., which owns Tymnet, moves some 250 software developers

from their current workplace in nearby Cupertino, Calif., to a just-completed complex in this Silicon Valley ony Shohtly less than one month

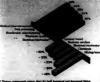
later, the consolidation should continue when the firm relocates its customer support and main tenance staff and its local network control center to the sum

If all goes well, the process is expected to be completed by Sept. 15. By then, McDonnell Douglas will have moved roughly 1.100 employees and unified nine previously separate facilities stretching in a 40-mile are from Cupertino to Fremont Calif., according to project lead

er Phil Arroyo. For Tymnet, the impending consolidation promises to improve the flow of internal infor mation by removing barriers to Continued on page 68

# Data View

Hiring trends In a survey on hiring in data processing, responder industries most frequently reported plans to increase forces in the second half of this year industries most free



# State MIS eyes security

Continued on page 67

BY DAVID A. LUDLUM

State government data processme managers face many of the same concerns as their private sector counterparts, including lack of security and manageme support, according to an annual

A lack of physical and data security poses "Inghtening" prospects to state government information systems managers, sust as it does in the corporate world, says Carl Vorlander, executive director of the National Associa tion for State Information Systems Inc in Lexonation Ky which recently released the results of its 1987 study of state covernment systems.

"One of the needs is a recog-Continued on page 72

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# Playing numbers

CONTINUED FROM PAGE 65 they have been making the measur ments for an average of 2.7 years, with 85% having started within the last three

The respondents suggested plans for significant increases in the use of the mea-surements, with 88% indicating they will use additional measurements in the next year. When asked to rate their direction ring the next two years on scale of one to five, with one representing an increase in use of measurements and five a de-

crease, the average response was 1.7. Customer's always right
When asked to cite the most effective
measures, respondents most frequently
named customer satisfaction. That was

followed by availability of applications to customers, adherence to budgets and

reping up with schedules. en asked which activities they cur rently measure, however, respondents cited customer satisfaction fifth most often. It was preceded, in order, by project status, computer availability, computer operations and completion of system de-velopment documents.

ore than one-third of the res dents - 38% - said they could not iden-tify tangible benefits from the measurebut most of those firms are obably those with little or no experior with measurements. Perry said.

The payoff
Of the tangible benefits cited, the most frequently named were reduced mainteimproved customer satisfaction, shment of standards, fewer proction errors and reruns and increased

areness of problems.

Most frequently cited as ineffective assures were adherence to project edules, sticking to project budgets, employees' time reporting and the num ber of lines of code employees produce per day. "There's been an idea that the more lines per day, the more productive. The institute believes that's false. It's got nothing to do with how good the quality

is," Perry said. Adherence to budgets and schedules was reported as both effective and meffective because "what some compa are doing well, other companies are doing very poorly," be said. "Some companies are just kind of picking numbers out of the are just kind of picking numbers out of the air. That's my interpretation of why

they're ineffective. Respondents indicated that their best sources of data for developing measures are logs or other records from previously produced software, customers or end users, problem or incident reporting sys-tems, accounting systems and quality control checklists.

More than two-thirds of the respon-dents — 70% — said they do not use software tools to collect quantitative informa-tion on data processing or to analyze it. No single tool was reported to be used by more than 17% of the group, the same vercentage that indicated they use inter-

ally developed tools.

The obstacles to measurement pr grams most frequently cited were staff acceptance, lack of tools, getting started and reliability of data reported by staff members. Data that is reported by staff hie he soon their lack of objectivity, ability or time, according to Perry.

Perry claimed the lack of quantitative measurement in data processing reflects a general lack of control. "Without some reliable numbers, DP management reliable numbers, DP management doesn't really know what they're doing," he said. "The tools of management are measurement and control. You can't con-trol what you can't measure. If you don't measure DP, by definition it's out of con-

He said one participant in the confer-ence cited the lack of measurement in speculation that senior managers rarely

romote data processing managers to seneral management positions because 'they're afraid they will run the company like DP - as an artistic endeavor with

ALEN D A

# JULY 26-AUG. 1

Computer Associates International, Inc. Annual User Conference. Orlan-do, Fla., July 26-31 — Contact: Computer Associates International, 711 Stewart

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— Contact: The Society for Computer tion Confe

tion, P.O. Box 17900, San Di Cald. 92117. Siggraph '87 - The Fourte

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## AUG. 2-8

chnologies Users a sociation Annual Forum: Remit-tance and Document Processing. San Francisco, Aug. 2-5 — Contact: Recagies Users Association, Continued on page 72

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# Investments

and-dirty project was initiated to devel-op a front-end program to present users with a menu of choices and then call in the selected program for execution Enter an outside vendor with an easy-to-use" package of programs and clear instructions on how to use them.

The users envisioned a short lear curve and increased productivity. What they didn't fully appreciate was the limit ed capability of the vendor's programs.

A decision was made to develop a sim ple tutorial that would provide an over-view of the in-house system. The results were amazing. Users requested another

tutorial on specific segments of the sys-tem. More tutorials were written. Conideration of the outside vendor's prod-ct war shelved. Relationships between

There are a couple of factors that merit comment. One is the simplicity of the tutorials. The goal was to make them so simple that any member of the user organisation, including the top manager, could sit down at a terminal and in just a system, albeit with simple examples.
The other factor concerns the cost

and appearance of the tutorials. They were drafted on a personal computer printed on a dot matrix printer. Hard copies of display screens were reduced pages. Facilities were available to pre-pare very professional, high-quality publications, but the project manager want the tutorials to reflect a project that was

Write for hockers, lockers There are some other factors MIS managers might consider in creating appropriate user documentation. The documentation must have a target audience You may have to divide it into basic and advanced documentation. The basic documentation would be simed at the novice and be used for training. The advanced

entation would be directed toward the experienced user and prepared reference use Programmers in general have never

been good at preparing documentation. One reason is that they know too much about the system. In preparing user docunation, you do not have to tell every

Try to target the basic documenta-tion at learning or training. Then, target the advanced documentation at referencing a majority or high percentage of the situations that might arise. Next, let the help desk, backed up by the programing staff, serve as the reso

rare or more complex questions.

If you do not have qualified staff with time to do the user documentation, there are alternatives. Perhaps the user could supply an individual to prepare the documentation. Or perhaps an investment in staide help would be wise in order to eet the schedule and satisfy the user.

Finally, remember that the docume tation carries a very clear message. It reflects your concern for and interest in the users' needs. Preparing quality documentation suited to the purpose can pay great dividends, even to the point of being a key factor in your success,

Gilliam is an independent computer and management consultant based in Posca City, Okla

## Tvmnet CONTINUED FROM PAGE 65

of the distances separating them, people in different sections that should have been communicating sometimes haven't done so," said Clint DeGabrielle, the network

systems firm's vice-president of marketing and domestic field operations. once all of us are in a single location, em ployees who have never worked together fore will finally be able to interface. The imminent move is also expected to

ove a boon to Tymnet's productivity by eliminating unnecessary travel between the firm's various local sites. For Tymnet's users in the Fortune 500, the move is expected to improve reand scope of the network's services. With

the new, consdidated complex, "Our enture Bay Area staff will be connected to the same general incoming phone num-ber," DeGabrielle said. For all its promised advantage though, the proposed move is by no stretch of the imagination wholly without "Our greatest fear," Arroyo said. that we'll shut down our phone and data s systems on a Friday eye

ning and won't be able to bring them up sgain in the new location by the following oday morning To avoid such a calamity and ensure uity of customer service, Arroyo said he will take some common cautions. "We plan to have all the data lines and systems in our consolidated fa-cility installed, checked and operational before we disconnect any equipment in

the old site," be said. As part of the upcoming move, Tymnet said it intends to replace its network

control center's existing communications processors with some improved models. installing them before the move. The pro cessors, manufactured by the McDonnell Douglas Computer Systems Division, will reportedly verify user passwords, collect customer accounting data, monitor data unications traffic and pinpoint net-

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Continued from page 67 P.O. Box 2016, Manchester Center, Vt.

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Networks. Colorado Springs, Colo., Aug. 4-7. — Contact: Coeur d'Alene, Idaho, Aug. 9-11. — Contactes Shub, Computer Science Depart-neet, University of Colorado, Colorado kaze, Wash. 99258. Springs, Colo. 80933.

Desktop Productivity Conference. Boston, Aug. 5-7 — Contact: Beth White, The Seybold Group, Inc., Suite 100, 100 land Court, San Jose, Calif. 95112.

Extending the Human Mind: Computers in Education. Eugene, Ore., ag. 6-9 — Contact: Unive ity of Ore on Continuation Center, 1553 Moss St., Jugene, Ore. 97403.

AUG. 9-15 Spocade III CAD/CAM Conference.

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RDB Frontiers '87. Boston, Aug. 10-14 — Contact: The Relational Institute. uite 106, 6489 Camden Ave., San Je

Macworld Expo/Boston. Boston, Aug 11-13 — Contact: World Expositions Mitch Hall Associates, P.O. Box 860 Westwood. Mass. 02090.



nition on the part of the policy [a lack of security] does exist. There's no sense of urgency. People say, 'You've never been hurt, so maybe we don't need to seend this lond of money.' "Vortander

"Maybe that's our fault," he added "Maybe we're not yelling loud enough, but we've certainly been yelling since

we've been writing these reports State governments tend to run large relatively sophisticated DP installati Vorlander said. "You're talking about some pretty big files — three million automobiles or taxpayers." Like corporations, the states are rapidly installing IBM

tworks, be said. The states' spending for software and communications grew 100% in 1986 from the previous year, with one reason being the greater availability of software applications, the study indicated. "A few years ago, all this was in-house. Now they're finding more and more off the shelf," Vorlander said. "Communications

is just grown."

The study also points to a "dr rise in the use of service contracts for de-nigning systems and programming, perhape in part because of a cautious eco-nomic outlook, Vorlander said, "Where it's a one-shot upgrade, we're not going out and hiring programming staff; we're not staffing up to the same degree." he

Some state budgets for computer training grew more than 50%, the study said. Some of the increase reflects an improved financial picture after severe bud-get constraints in the early 1980s, Vor-lander said. "The emphasis has always been there; the cash may not have been State organizations also resemble the rivate sector in a shift in the role of inforprivate sector in a smitt in the role of infor-mation systems managers from control to coordination with the expansion of end-user computing, according to the study. This decentralization stresses the need for standards, integration, documenta-tion, budget reviews and studies of cost-militations. Methodox miss. effectiveness, Vorlander said.

There comes a time when this field has grown large enough that there's got to be a little decentralisation to get the most effectiveness out of the current state of the art," he said. "Twe always felt that state government pretty well re-flects the corporate world. In some cases, they lead it. In some cases, they are be-



# COMPUTER INDUSTRY

## INDUSTRY INSIGHT

Bohdan O. Szuprowicz

# Faster chip within sight

A few years ago, gallium arse ctors were touted as faster, cooler and more mune to electromagnetic rad earchers predicted that these semiconductors would account for multibillion-dollar markets by the mid-1990s.

But reality has not borne out those lofty projections. The high tary metal oxide silicon technology and the semiconductor stry slump have combined to prevent the gallium arsenide markets from taking off as rap-

idly as was originally expected. Many electronic systems dem arsenide will remain a niche market for specific use tions, signal processing, military intelligence and some super-

# Now, new forces are at work

again boosting gallium arsenide and IBM is believed to have a large gallium arsenide research and development program. The inevitable drive for higher tedly a major factor. The latest R&D programs

ggest it may be possible to in ease by fivefold the currently known penetration velocity of electrons through gallium arse nide materials. Because gallium senide is five times faster than silicon on this score already. ese microchips may be 25 nes faster in the future.

If computing is following a trend toward optical technology because of the physical limita-tions of silicon technology at very high speeds, then gailium arsenide microchips, with their optic capabilities, appear even re attractive. Thus, even ptical venture capitalists are again giving attention to gal-

lium arsenide start-ups. Kopin Corp. in Taunto Mass., is one of the latest ven-tures involved in the development of thin films of crystalline rial, which are expected to Industry rebound continues

BY ADAM STONE

Led by NCR Corp., Apple Cor er. Inc. and Tandem Como ers, Inc., the computer industry last week reported generally strong second-quarter financial results that continued the up-swing trend of the first quarter. In addition, the semiconduc-

tor industry showed strong re-covery signs, with both Intel Corp. and Advanced Micro De-vices, Inc. (AMD) reporting their strongest quarters in two years or more (see story page

NCR. NCR exceeded its earnings expectations for the quarter and reported its seventh consecutive guarter of double-

NCR posted earnings of \$98.6 million, an increase of 25% from the \$78.9 million in earnings it reported in the like quarter a year ago. Sales grew to \$1.35 billion, up 16% from last year's figures. Earnings per share were \$1.05, up from 80

NCR's earnings came in above most industry expecta-tions, primarily because of the firm's personal computer sales, according to Bob Grandhi, an an-

sonal computer and Tower supercomputer lines, both intro-duced within the last five years, The company reported net in-come of \$53.5 million, or 40 contributed beavily to the revenue increases, according to Jons-

# Apple, NCR exceed expectations; Oracle, DCA continue to thrive

1987 second-quarter earnings



than Fram of Bear, Steams & Co. in New York. "I think the cents in the like quarter last any made a good bet on w products a few years ago,

The weakening of the dollar road also contributed to the mpany's revenue increases, alysts said. NCR's Pacific and opean marketing groups led Apple. Analysts said Apple's

65% from the \$32.3 million, or 25 cents per share, reported in the like quarter last year.

Revenue grew to \$637.1 mil-n, up 42% from the \$448.3 sillion in sales it reported in the ovvesponding 1986 quarter. Willard Brown of First Albany

Companies, Inc. in Albany, N.Y., called the revenue increases "al-most unbelievable." Apple attributed half of its arterly revenue to the high ac-stance of new Macintosh ducts, especially the Macin in SE and the Mac II, as well as

integrated manufacturing," Gir-ton said. "So they'll be able to in-tegrate the two packages, if

However, NCA might pro to be "a drag on Ask'a for a while, Girton said

\$10.7 million — is a little heavy,

Buying customers' According to William Shattuck, a

software analyst with Montgom-

ery Securities in Sen Francisco, the merger will help Ask move further into the desirable DEC

and the company has lost mo for several years in a row."

NCA's debt level — about

hat's what they intend to do

# Hogan chairman resigns

BY ALAN ALPER

DALLAS - In a major shock at one of the software industry's test recovery companies, Hogan Systems, Inc. Chairman and Chief Executive Officer George L. "Larry" McTavish abruptly resigned last week over "philo-sophical differences" with the sking software company's

McTavish, who just last month was promoted from pressdent to succeed Gregor Peter-son ICW, June 151, could not be reached for comment. A compa ny spokesman said McTavish and the board have agreed not to reveal the nature of their differ-

Gary Fiedler, a Hogan board member and chairman of First Interstate Bank of Nevada NA, was named to replace McTavish Fiedler, who has held a number of positions within the banking Continued on base 74



# Ask to swallow competitor NCA Acquisition furthers firm's position in DEC manufacturing software

tories, and integrate it onto the factory floor through computer-integrated manufacturing," Gir-

BY JAMES A. MARTIN

LOS ALTOS, Calif. - Asia Com puter Systems, Inc. said la week it plans to acquire NCA Corp., a competitor in the Digital Equipment Corp. manufacturing software market for \$43 mil

Under the agreement, Ask will make a tender offer to acquire NCA's outstanding com-mon and convertible stock, and NCA will become a wholly owned subsidiary.

Ask developed and markets a

manufacturing management ind Manman, for use in DEC Hewlett-Packard Co. HF

NCA currently offers a manu-cturing resource planning system that integrates manufacturmarketing information. The firm's software is DEC VAX compatible, and the company is a fler of VAX systems and per-

Strengthens presence The acquisition should enable Ask to "get more products onto the factory floor," ton, an analyst with Birr, Wilson Securities & Co. in San Francis-

"This may be a way for Ask to ake NCA's software, which helps companies manage in

turing market. "On the surface, however, it looks like Ask is really just buying customers and market share rather than expanding into any new mar-kets," Shattuck said.

Ask approached NCA for ac quisition as a means of increasing its own market share, according to Rotald Braniff, chief executive officer of Ask. The combined companies are expected to have an installed base of about 2,000 systems, divided equally between HP and DEC environ-

and for staff changes have not been determined yet, Brandi said. 'There will be some degree of overlap in all areas of the company, but our goal is to bring into the company all the people we can," be said.

Officials at NCA were not available for comment.

# Sprint replaces president

Former United Telecom exec to take charge of troubled firm

## BY ELISABETH HORWITT

KANSAS CITY, Mo. - After a year of aggressive expansion coupled with mounting operating losses under Presideat Charles Skibo 11 S. Soviet Commun. nications Co. has replaced Skibo with Robert Snedsker Jr., the company an-

nounced recently Snedaker is the former vice-chairm and chief operating officer of United Tele-communications. Inc. He may have been hired to introduce bottom-line consciousness to the troubled company, or to evaluate whether the Sprint joint venture be-twees GTE Corp. and United Telecom should be terminated, according to John Bain, a senior vice-president at Shearson Lehman Brothers Inc.

Snedaker has been out in there to fix things or else to write the venture off."

GTE and United Telecom jointly aped that Sprint's financial results for the second quarter of 1987 will include a nonrecurring pretax charge of approxi-mately \$350 million. Of this charge, \$76 million reflects a write-off of uncollectible ta receivable from problems expenenced during the start-up of the joint venture, rapid customer growth and the transition to a consolidated billing system. ional \$260 million stems from a write-down of analog-microwave network assets, which are being made redundant as the company nears completion of its fiber-optic network. The network is scheduled to carry 90% of the interes-

change carrier's traffic by year's end. the partners said

On a losing streak Inefficient bill collection has been just one of Sprint's woes under Skibo's year-long re, according to Bain. The analy noted that the company's losses have grown larger each quarter, and predicted that the second quarter would show a \$600 million to \$650 million loss on \$600 million to \$700 million in revenue. Barn estimated that uncollectibles con

stituted 19% of Sprint's first-quarter rev-enue, while leased facilities for WATS and other telecommunications accounted for 27%. The latter figures reflect Skibo's strategy of aggressive and expensive re-cruitment of new customers. Bain said. "Last year, Sprint offered an addition al 10% discount if customers signed up for a year. They got a tremendous resp and were forced to lease more facilities from MCI (Communications Corp.) and AT&T because they couldn't support the increased traffic on their existing facilities," Bain said. This may have completely erased Sprint's profits from those new

# Chip industry on the mend

Intel, AMD report healthy revenue, income for quarter

## BY JAMES A. MARTIN

The U.S. semiconductor industry showed further signs of recovery last week, with two of Silicon Valley's leading chip mak-ers, Intel Corp. and Advanced Micro Devices, Inc. (AMD), reporting strong reve nues and income. AMD reported its first ie quarter in two years

Each company's revenue growth reflects a strong upturn in the chip industry as a result of sales of a veriety of chip tech-nologies, according to Thomas A. Thom-hill, technology analyst for Shearson Leh-man Brothers, Inc. in San Francisco.

"These companies have been through a difficult period already, so they're fairly lean and more efficient, and they're getting good earnings increases as a result Thornhill said. "But more important their growth has been based on a bro range of products. The micro area has been important for sales, but so have dis crete and standard logic products. That's Intel said its second-quart \$439 million, compared with \$305 million for the same period last year. Net income was \$46 million, or 38 cents per sha impured with a net loss last year of \$20 lison, or 17 cents per share. Intel had not enjoyed a net income of that size since

# third-quarter 1984's \$70 million. For the first six months of fiscal 1987, intel a revenue was \$833 million, up 42% from \$585 million. Net income was \$72

million, or 59 cents per share, compared with a loss of \$43 million, or 36 cents per

Intel's actual income would have been higher without the \$10 million spent to surprise its 18,000 employees with a bemus check equaling one week's pay. The company rewarded those employees or board since Dec. 31, 1986 for helping Intel through its slum

## MD, Motorola show gains anyvale, Calif.-based AMD reported

first-quarter sales of \$192.4 million, compared with \$154 milion for the sa uarter last year. Net income was \$4,1 on, or 2 cents per share, cor with a net loss last year of \$28 million, or

49 cents per share In another encouraging sign for the chip industry, Motorola, Inc. reported that sales of its semiconductor products

increased 13% in the second quarter. Motorola also said its-semiconduct profits increased by an unspecified amount. New orders, led by demand from nouter vendors, consumer electronics firms and semiconductor distributors,

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# Hogan

CONTINUED FROM PAGE 73 industry, has resigned his post at First lo-terstate to run Hogan on a full-time basis.

the Hogan spokesman said.

Although Fiedler has not previously held a position within the software business, analysts said he has been aroun Hogan long enough to understand its products and position in the market. "He's been more involved in Hogan

than his position as a board memb would connote," said Terence Quinn, an analyst with E. F. Hutton & Co. "Hogan's board has been more actively involve running the company than most boards

Analysts expressed surprise at the ning of McTavish's departure. "It's abed surpris solutely a surprise; it's something of a shocker," noted David Thomas of Hamecht & Quist, Inc. "Appare enty lost confidence in him fo

Many industry observers have credi McTavish with masterminding the stra ny to regain profitability and credibility. rough the first nine months of fiscal 1967, Hogan's revenue was up 36% to \$30.7 million, while operating profits reached \$4.8 million, compared with a \$4

pense reduction and a stres ng of its internst eve played a part in returning the con pany to profitability this year after two ecutive weers of loss

recent acquisitions of Systems Four of Durango, Inc. and GDK Systems, Inc., which have enabled Hogan to flesh out its product line and are expected to provide

incremental growth.

A key to the firm's strategy is the un-precedented relationship McTavish forged with IBM lint year, when IBM became the exclusive marketer of Hogan's banking software in the U.S. and Canada in return for royalties. Analysts last week said IBM reportedly has recently reached contract agreements with a number of identified banks. "The IBM deal app n now be taking off," Hambrecht &

Speculation about McTavish's unex ted exit centered around a variety of issues, including disagreements with cer-tain board members on the future direction of the company and personality con-

cts. McTavish "may have planned several ore acquisitions that, in terms of eize, ere bolder than what the company had no before," E.F. Hatton a Quinn noted. haps the board would not go along

(thinm.)
McTavish may have been pushing to onden Hogan's relationship with IBM either a product or geographical busis, ann maggested. McTavish is also be-wed to have been interested in getting pan into the professional services busi-s, he added, a move the board may

have contested.

One analyst, who requested anonymity, said McTavish'a resignation may have resulted from a power struggle with former chairman Peterson, who remains on the board. "There may have been some

professional jealousy between Peterson and McTavish, since McTavish is credit-

## Rebound

CONTINUED FROM PAGE 73

the Apple II GS.

tant thing is that they are making progress in the corporate ac-counts," Grandle said. "They are opening doors in the Fortune 1,000. That's a very strategic thing for Apple. It seems that corporate America has decided to make

new investments in the PC area Brown speculated that in 1983 and 1984, there was a mad corporate rush for PCs, and when massive productivity increases were not instantly forthcoming.

the storm died down a little Apple spokeswoman Barbara Kras said she believes the Apple experier this quarter is indicative of a general up-swing in the industry, brought on by the introduction of new products from Apple,

The September quarter should boos sur-end revenue even higher, as person al computer sales to students and schools increase, according to William O'Connor Jr. of Fourteen Research Corp. in New

Tandem. Strong international busi-ns, accounting for 44% of fiscal third-arter sales, propelled the Cupertino, Calif.-based fault-tolerant systems ver dor to a 41% profit gain on a 31% rise in revenue. Tandem earned \$25.6 million. or 26 cents per share, on revenue of \$264

Tandem reported major new contracts in its target markets during the quarter, including a pact with Morgan Guaranty Trust Co. of New York's Belgian operations center and deals with two of Japan's

three leading retail Tandem won all of those contracts in conjunction with other vendor partners under the firm's Alliance partnership pro-

eywell, Inc. The only res wholly owned part of Honeywell's com-puter business, its Federal Systems unit puter business, its Federal systems um, experienced a drop in profits compared with the like quarter in 1966 Most of Honeywell'a noncomputer divisions had profit increases, contributing to an overall 24% rise in earnings from continuing operations to \$54.3 million. Revenue increased 19% to \$1.57 billion.

The company would not disclose the exact amount of the Federal Systems drop. However, the decline was sufficient to wipe out an otherwise increased profit in the company's serospace and defe

When Honeywell Bull, Inc. formed, Honeywell agreed to divide fu-ture Federal Systems profits with the

spin-off company.

A Honeywell spokeswoman said that
this profit splitting accounted, at least in part, for the reported drop in profits. The company would not disclose results from Honeywell Bull, which Honeywell jointly owns with Compagnie des Machines Bull

and NEC Corp.

Honeywell Bull recently announced that Executive Vice-President Eugene Manno, a 26-year Honeywell veteran. had resigned to pursue other interests. Manno had headed Honeywell's Billerica. Mass.-based small systems division since Mass.-based man system.

1982. Manno said his departure was not related to the formation of Honeywell Bull earlier this year. His response

been divided among several executives. Oracle Corp. Oracle made a strong varior in its fourth quarter ended May 31, as it had throughout the fiscal year. Revenue increased 142% to \$50.4 milion, up from \$20.6 million at the like peri-

od last year. Net income increased 195% to \$7.6 million, compared with \$2.6 million in the corresponding quarter of 1986. Earnings quarter last year to 24 cents

Oracle, headquartered in Belmont, Calif., markets the Oracle relational data

Clair, markets the Oracle resistonia data base management system. Its principal competitor in the field is lagres, a product from Relational Technology, Inc. "Oracle has jumped ahead of lagres became of its focus on the IBM main-frame and IBM Personal Computer and

building a strong worldwide distribu-to network," said Scott Smith of Don-tson, Lufkin and Jenrette, Inc. in New

York. Fiscal 1987 revenue was up 137% to \$131.3 million, from \$55.4 million in the previous fiscal year. Net income was up 165% to \$15.6 million, compared with \$5.9 million hast year. Eurnings per share increased from 21 cents in 1986 to 50

gital Communications Asso-s, Inc. (DCA). The Alpharetta, Go.for of network com ems reported that its net income for e year was up 91% from that of 1986. Revenue for the fiscal year ended June I totaled \$181.4 million, up 20% from

fiscal 1986 figures Net income was \$28.4 million, or \$1.91 per share, compared with \$1.10 are a year early

Net income for the fourth quarter was \$6.9 million, an increase of 72% over the like period in 1986. Net income per share ss 47 cents, up from 27 cents last year Revenue for the quarter was \$45.3 mil-lion, up 22% from last year but down 10%

on the previous quarter.
Industry analysts said that the 10% arter-to-quarter dip was caused by a crease in sales of DCA's micro-to-main-

na.
According to Stephen Cotler at Mont-mery Securities in San Francisco, the op-off in sales was the result of a normal hastry slowdown brought on by IBM's roomal System/2 announcement.

row usat companies neve had a chance to evaluate the impact of the IBM as-nouncement, Cotler said, DCA will be "on its way back to solid growth." Sengate Technology. The Scotts Valley, Calif., manufacturer of rigid mag-

netic disk drives reported a strong quar-ter and year, with annual revenue more an doubling 1986 fa

than doubling 1986 figures.
Revenue for the fourth quarter ended
June 30 was \$250 million, an increase of
77% from the \$141.5 million reported in
the fourth quarter of 1986. Net income
for the quarter was \$37.1 million, or 74
cents per share, up 126% from \$16.4 mil-

on, or 34 cents per share, in last year's For the year, revenue was \$560 mi-lion, up 108% from the 1986 total of \$459.8 million. Year-end net income was \$139.7 million, or \$2.81 per share, up from \$34.5 million, or 72 cents per share. corted last year. Sales to IBM accounted for 17% and

24% of revenue for the quarter and the year, respectively. No other customer ac-counted for 10% or more of Seagate's venue during either period. Senior Editor Clinton Wilder con-

# Arete, Plexus scrap merger plans

SAN JOSE, Cald. — Unix-based systems makers Arete Systems Corp. and Plexas sters. Inc. have canceled their neemly announced intent to merge because of concern about integrating the two Unix-based product lines. The decision to abort the merger w

the decision to abort the merger was mutual, as each company's board arrived at it separately, according to both compa-

The combined company, which was to have retained the Plexus name, would have created a firm with about \$65 million

ner system product lines, originally thought to be complementary contain

Both firms said they expect no majo changes because of the merger cancella

Arete sells primarily to OEMs, includ-ing Unity's Corp., while Plexus utilizes di pect sales and value-added reseller chan

## Faster chip CONTINUED FROM PAGE 73

nide microchips. The 1984 um arsenide microchips. The 1986 start-up has received \$25 million in two rounds of financing from leading ventur capitalists, including the Charles River Partnership, Venrock Associates and a major unidentified industrial corporation

Gigabit Logic, Inc. in Newbury Park, Calif., is the grandindtly of gallium area nide microchip ventures, with a total of \$49 million in three rounds of financing

from a large syndicate of venture cap firms and major corporations, include Analog Devices, Inc., Cray Research, Inc. and Digital Equipment Corp. With another two dones or so major

electronics manufacturers in the U.S., Ja-pan and Europe positioning themselves to clean up on any gallium amenide bonan-za in the future, only the best financed res will have a chi

est of 21st Cents is North Berges, N.J., and publisher of "Super-growth Technology USA."



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professionals approach salary discussions the same way they make

new car purchases: They prepare to negotiate with a mixture of excitement and dread. Can they get the best deal, or will the sick interviewer talk them in oting less than they de-

"I really hate job interviews says one MIS applicant. "I don't mind talking about my qualifications, but I never know what to say when they ask about salary requirements. I want to make as much money as possible, natu-rally. On the other hand, I don't want to price myself out of the

On the other side of the tab an employer depends on his workers to do their best possible jobs every day — unlike an auto nobile dealer, who is primarily recorded with short-term prof-The employer knows workers will not perform well if they feel cheated on salary.

"Salary negotiations are not ersarial situations," says versarial situations," says ert Lane Personnel in Hart-

looking for value, and they are prepared to pay for it. In fact, many employers often make unexpectedly generous offers."

Good impressions pay off The best way for MIS profesence such largess is to simply make a good impression on the employer throughout the inter-

est por nible impression on everyone from the receptionist to the employment manager to the otential boss," says Robert lammond, president of R. F. lammond & Associates in Lexington, Mass. "You should try to impress them all with your shillty, energy and professional de-meanor. Every position has a salary range. The more they want you, the more likely your offer

will be at the high end of the range."

Despite the willingness of both the candidate and the interviewer to straightforwardly discuss salary, applicants should case salary, applicants should still be somewhat cautious about revealing their ideal salary, ac-

## Moment of truth Candidates should avoid specifytil they know that the comp its them and that they really

However, at some point during the interview process, candi-

dates must answer the question What kind of a salary are you oking for? It's the moment of truth. The b is exactly what you want.

ould you ask for less money than you expect because you don't know what the company will pay, so as not to risk losing the job? If you do present a low figure, you may regret it and find

ALARY negotiations are not adversarial situations. Companies are looking for value, and they are prepared to pay for it. In fact, many employers often make unexpectedly generous offers.

GILBERT LANE PERSONNEL it awkward to retract.
Candidates who deal through you make an outsta pression, a company might ex-tend itself to 10%."

an employment agency are sometimes in a better position to tiste because agencies usu ally know the salary range for The want ads seldom list sale ries. But applicants can make an educated guess. "Check agency

mgs. "If you feel you are in a strong position, you might even go as high as 12% to 15%, if such newspaper ads to determine sal-ary levels for similar jobs," Ham-

mond says. "However, keep in mind that some agencies follow the unfortunate practice of print-ing shightly inflated salaries in order to attract applicants. Use the figures shown only as a rough

checking with friends who hold similar jobs. "You can't ask them what they are earning, of course but you can say something like How much do you think a good ware engineer is worth? In most cases, a candidate's tied to his current earnings. "A date can anticipate an aver

age increase of 5% to 8% of cura candidate should simply tell the rent salary," Hammond says. "If Often, people will be about their current salaries, she observes, because they want a higher base from which to negotiate. "That is always take," she says. "You eventually trip yourself up when you be you forget what you said to whom. It really isn't necessary. even if you are underpaid in your HOWARD SPECTER present job. Your current salary Your talents, skills and experi-ence do. Our company often of-fers more than we know a candi-

RSVP Services in Cherry Hill, N.J., concurs. "A 5% to 15% in-

crease over current salary is a good rule of thumb," he says.

possess critical skills that the

ompany is having difficulty find-

ing or if you've been working in a

Honezty's the best policy Deborah Schrader, employment representative for Arkwright Mutual Insurance Co. in Wal-

tham, Mass., suggests another approach. "It's very simple," she says. "To get the best offer,

typically low-paying en ment, such as a college."

The higher end is justified if you

date would accept because we want to be fair."
The bottom line is that m tially ask for a salary 10% empanies are not looking for burgain employees, Schrades s. They want to hire good ple who will stay with the at least three to five years.

Malaus Walter Man And

a figure is within the company's range for the job," he adds.

higher than their current earn

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# Upcoming Computerworld Spotlight Sections

Issue Date	Topic	Ad Closing Date
Aug 10	DBMS for Large & Medium Scale Systems	July 24
Aug. 17	Beid Service	July 31
Aug. 24	Education & Training	Aug 7
Aug. 31	DBMS for Micros & Small Systems	Aug. 14
Sept 14	DB2 Market	Aug 28
Sept. 21	Hardware Roundup Large & Medium Scale Systems	Sept 4

# STOCK TRADING INDEX



Indexes	Last Week	This Ried
Communications	103.4	103.6
Computer Systems	122.7	128.1
Software & DP Services	130.7	133.6
Semiconductors	111.2	118.9
Peripherals & Subsystems	115.6	117.9
Leasing Companies	120.4	119.7
Composite Index	103.1	103.6
S&P 500 Index	126.4	126.4









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# Computerworld Stock Trading Summary



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# The grapevine

### Rumors responsible for IBM ups and downs in volatile week

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Apple relationation dix momentum, gaining 6 points in four days to reach 44. AT & T, and other firm with better-dass-expected earnings, rose 2% points to 51%. Digital Equipment Corp. edged closer to 18M price levels, moving up 6% points to 166%.

NCA Corp. in Santa Clarx, Calif., surged 38%, up 2% points to 8%, after its uncounced exquisition by Ask Computer Systems, Inc. Ask gazzed 1% points in four days to close at 13% Thursday.

# System/36, 38 hybrid held up

Hardware ready, but software isn't; System/36 upgrades due this year

HIS was easily

the most candid

MARTY GRUHN

THE SIERRA GROUP

e follow-on 3X product.

IBM also said it will offer elec-

tronic diagnostics and support for System/36 and 38 products.

they have ever

### BY STANLEY GIBSON

DALLAS - IBM will not a nounce its much-anticipated processor to bridge the gap between the System/36 and 38 until 1988, the firm told a gathering of

However, IBM said it will enhance the System/36 line later this year, probably by adding a new low-end machine and boost-ing processing speed and memory capacity.

In what attendees called a radical degree of candor, IBM gave some 30 industry observ-ers details of its mid-range strat-egy and outlined plans to extend its version of the Unix operating system to a wider range of pro

were in attendance, includi Vice-Presidents Standard

IBM said the new system was have ease-of-use features adapt-ed from the System/36 com-bined with the integral data base of the System/38. IBM did not use the widely known code name Siveriake to describe the com-puter, but called the machine. Schwartz and George Konrades.
"This was easily the most ans was easily the most candid they have ever been," commented Marty Gruhn, vice-president of The Sierra Group in Tempe, Ariz.

The System/36-to-38 bridge — dubbed Silverlake — will be housed in an IBM 9370-type box and will use the same peripherals as the 9370, said Frank Drubeck, president of Communica-tions Network Architects, Inc. in Washington, D.C.

IBM 9370 nounced timetable.

cannot use the processor that IBM spokesmen last weel confirmed that deliveries have m rescheduled as much as six oths earlier on account of im-

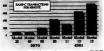
similar to what it offers for its 3090 mainframes, which have the ability to notify a remote site

firm mid it will offer MVS/XA on the 9370 Model 90, said Frank Doubeck, president of D.C. Bob Tasker, an analyst with

At last week's analysts' brief-ing, IBM also outlined a number of plans for 9370 enhancements. ed the same story but said be

mications Network Ar-The Yankee Group in Boston

Transaction points istributed by IBM comparates of 9370 and 4381 ter



proved manufacturing capacity.
Forrester's McCarthy said be was also told that general availability of shipments of the 9370 is 60 and 90 will begin in IBM's previously

said the 9370 will offer CICS under VM later this year. told that the 9370 will grow in power to further overlap the company's 4381 family. Al-

he operating system is the The operating system is the key. But it is not there yet, "Dub-beck said, claiming that IBM has the hardware of the new ma-chine essentially complete. The operating system will be

a malfunction. Gruhn said the System/36 en hancements could be expected in the fourth quarter of this year and that a low-end System/36 is ne operating system will be designed to run existing Sys-tem/36 and 38 programs. How-ever, System/36 and 38 hard-ware will not be upgradable to the new processor, IBM told the orthorion. Craig Symons, vice-pre

of the Gartner Group, Inc. in Stamford, Conn., said the new machine could be based on IBM's Personal System/2, not-ing that the current low-end Sys-

n/36 Personal Computer is sed on IBM's PC AT. Daubeck said the System/36 nancements could include an ternal disk-storage cabinet, ich could include use of the 9335 disk drive that is used with 9370 and System/38 proces-

Much time at the conference ras devoted to IBM's Systems application Architecture (SAA), with company executives saying SAA applications cannot be ex pected until 1990.

However, consultants were told that communications proto-cols will be brought to AIX, IBM's version of AT&T's Unix, so that it can coexist in an SAA

AIX will also be brought to more families of IBM proces-sors, including the 370 line, several consultants said. AIX for the PS/2 will appear in the second quarter of 1988, IBM reportedly

told one analyst.

power, smaller processors will be added to the 3090 line. The result will be greater overlag among the 9370, 4381 and 3090 product eroups.

'Architecture of future' The Yankee Group's Tasker sa IBM referred to the 9370 as the architecture of the future. Bob Randolph of Framingham, Mass.-based International Data Corp.'s Digital Equipment Corp. advisory service, said the impli on was that the 9370 would grow both upward and down ward, like DEC's VAX, eventual

ly obscuring the 4381 line. IBM has been testing the 9370 processor at its Dallas facility, and, is a departure from past practice, the company made the testing information available to consultants at last week's meeting, promising more complete information as it become

The charts released by IBM detail the performance of 9370 and System/36 and 38 processors in comparison with DEC VAXs and processors from Hewlett-Packard Co. and other ven

of IBM's proprietary mp-C commercial interactive schmark, in which the 9370 According to Daubeck, IBM also said both RPG-II, the language used to program the Sys-tem/36, and RPG-III, used on the System/38, will be included ion to the 370 world sim-be said.

Consultants agreed that IBM called the meeting to reinforce the notion that its mid-range does indeed consist of two archi-tectures: the System/36 and 38. which it calls one family, and the

Several attendoes said they sught IBM was trying to range a prevailing negative mion about its mid-range. IBM said that it has sold 34, 36 and 38 lines, and two

thirds of the total are installed outside the U.S. Consultants said IBM stressed that it would not abundon an installed base of ts were virtually animous in praise of the conence and in the opinion that

M is closing the gap between elf and Digital Equipment TBM is doing more than [simply] posturing about it being

the year of the customer. They are changing, fundamentally, their way of doing business," Gruhn said. She said IBM made a rincing case that it can offer better price/performance in the mid-range

However, Gruhn added, IBM still has ground to make up in the areas of functionality and ease of

# Court orders Samsung to halt PC sales

SANTA CLARA, Calif. - Delta Computer Corp. was granted a sporary restraining order last ek barring Samsung Semiconweek barring Samsung Semicon-ductor, Inc. from selling prod-ucts similar to Delta's IBM-com-

tible personal computers. The Superior Court of Calfornia here ordered a restraining order effective immediately and sting until a scheduled court sring July 31. Manafield, Mass.-based Delta

filed a \$60 million lawsuit against filed a \$60 million lawari against Sammung, its supplier, for alleg-edly marketing Samsung PCs to dealers directly against the name products bearing the Delta labet. Delta claims Samsung signed an agreement in March for Delta

to be the exclusive U.S. supplier of specific Samsung PCs.

Delta terminated the agree-ment last month and then filed

"Before we even had our product out, they were advertis-ing theirs," said Jim Patterson. Delta's vice-president of mar-keting and sales. "It was very

Patterson said Delta alleges that Samsung sales represents tives from the Korean firm's nta Clara subsidiary have been calling on Delta's authorized re



stacks up as a solid competitor to the VAX and other processors. sometimes coming out ahead and at other times trailing other ma

"Slinging mud"
Forrester's McCarthy saul the new emphasis by IBM on mid-range benchmarks shows the firm has "jumped into the ring and are slinging mud, just like other vendors."

But McCarthy criticized the testing environment because it does not include real terminals and printers but just a connection to a 4381 that simulates the

In what IBM claimed to be greater openness concernsta benchmarks, the company an unced that this fall it will make ublic the characteristics and stures of its Ramp-C standard. according to Marty Gruhn, vicepresident of The Sierra Group in Tempe, Ariz. However, IBM will not publish the code for the test.

"For the last two years, IBM has been mudding along," Ran-dolph said. "Then along came DEC and pointed the direction. IBM watched their success and then said, 'Aha! That's the way to eo. Now, how fast can we get

# Computer bill clears legal hurdle

BY JEFFRY BEELER

SACRAMENTO, Calif. - A bill med at strengthening the ate's computer crime law now seems virtually assured of enactment after clearing last week what its proponents regarded as its most serious obstacle.

With last-minute amend-ments added by the California Assembly's Public Safety Com-mittee last week, the bill would spare from prosecution any workers who use employers' systems for personal reasons as long as their madeeds result in no data destruction or alteration.

In the bill's original form, emthe au stragman torm, em-ployees who misused their com-panies' processors could be charged with a felony, even if their actions left the employer's data and programs intact. The rationale behind Senste Bill 255's (S. 255) provision was that ic security breach can force ortions to spend great sums

rity.
The exclusion was grudgingly added in response to claims that S. 255's original language would make a serious crime of even minor infractions, such as the use of corporate systems for drafting

First raised by the Teamsters union during testimony before the Public Safety Committee on June 29, the objection drew a swift reply from the bill's backwho denied any intent to outlaw benign systems access by employees. "Our purpose in drafting the legislation was to ad-dress full-blown computer crimes, not the unauthorized typing of personal letters," said Charles Fennessey, legislative consultant to state Sen. Ed Du-

vis. S. 255's author. In another rebuttal to the In another rebuttal to the teamsters' stated fears, propo-sents also dismissed as highly improbable the suggestion that law enforcement officials would take the trouble to prosecute in-

U.S. affies and to press for finan-cial compensation for the dam-age to national security.

If sanctions must be imposed, the import ban should be limited to the offending subsidiary, To-

erally impose sanctions against foreign firms for export control violations, because it could invite

foreign countries to do the same

against U.S. corporations, per-

Positive punishment James A. R. Johnson, director of government affairs for Apple.

use of corporate CPUs. Reaction to the chan 255's language ranged from de-light to disappointment.

Some displeased
"I'm not very happy with the amendments," said Los Angeles City Attorney Alice Hand. "But right now, I'm not sure whether the proposal to exclude investi tive expenses from the bill's provisions is a major drawback."

But Organization Manage-ment, Inc. President Don Burns, one of S. 255'a staunchest defenders, viewed last week's leg-inlative developments somewhat "I'm very pleased ith what has happened to the gislation thus far," Burns said.

legislation thus far, manus.
"The amendments were added to the bill with the full underthe would be restanding that they would be re-viewed very carefully and might be altered at some future date If enacted, S. 255 would re-

years to switch to another sup-Instead of trying to bookrupt Toshibs and all of its subsid-

iaries around the world, let's make them pay for the costs of new research and development necessary to regain America's lead in military technology over the Soviets," Johnson suggest-

to the ottending studentary, 10-shiba Machine, and not imposed on all units of the Toshiba par-ent, Tasker said, in any case, he added, an import ban should have a broad exemption for im-ported components used in U.S.-Tokyo Electric Power Co., a Toshiba subsidiary, makes Ap-ple's low-end Imagewriter printemption in the Senate bill.

Tanker said it would set a bad precedent for the U.S. to umlater, an Apple spokeswoman con-

House Ways and Means Com-mittee said they would try to draft sanctions that balance the need to penalize Toshiba with

the need to protect U.S. manu facturers and distributors from economic barm

However, Rep. Duncan Hunt-er (R-Calif.), supporter of a per-manent ban on Toshiba imports, said Congress should put the in-terests of U.S. military security nience" of U.S. businesses and Plant I hasp it quiet. Dysobening over the next se-cent. For any property of the property of the con-cent. According to one severe, light the valid according to one severe. In gifthe valid according to the severe of the property of the collection systems power for the property of the prope

LINES

INSIDE

The sun also rises. Developers and users last we Compaq plam to release a 20-MHz 386-based sys-early September. One or two users said they belie early September: One or two there were overy sensor-company will position the system as a graphic workstate with Microsoft's 386-Windows and Autocand's Autoda bounded in. One user thinks this would be a marri move Compan, "People are alsoptical shoot being 386s because there is no 50 or applications. But if you come in with that has a purpose, like a graphic workstation, and in them scene still for run out, it, it's good way to position them scene still for run out, it, it's good way to position the

Could it finally happen? Compaq is also debeting whether to mnounce a Touliha-like lapton, according to one user, but still card teckle if there is enough of a market for it.

"The reception within Compaq is lakewarm, but I told them the possibility of Toulihab being barned or hit hard (congressional searchion), there is a good opportunity

all of the week. One of AT&T's sai need that reports that the Big Bell's co for sale are absolutely not true. "Every of their resumes together to do say

fic. The two companies will be working on produce a panel Tandem's already impressive array of SN/ wity products. Netlink now markets a network one r that allows different types of terminals to switch

of suggested by Briton A. P. G. Brown, on Don Deutsch said he is awaiting its re-

raids a new Network Control Program, according to starty sources. One source claims that IBM was a starty sources. One source claims that IBM was enounce the new NCP on June 16, except that the prog st designed to run with another long-wrated IBM in criton: the besfeld up, dual-processor 3725. The or source IBM initiates and there were unexpected hast-miches in the 3725, which delayed its surveiling, thou of the dire when the "new" NCP will become current

# Firms lobby

cense to ship U.S.-made prod-

cense to ship U.S.-made prod-ucts out of the U.S.

Tonhiha Machine Co.'s sale of submarine propeller technology to the Soviet Union was "outra-geous," sestified Joseph Tasker Jr., a Washington-based atto-ney who is representing the two trade associations. But, be said, there is a "risk that imposition of tions in the form of an import ban can cause serious eco-nomic barm to the American information technology industry."
Toshiba's subsidiaries make

ers, computer printers and disk drives, grivate branch ex-changes, telephone equipment and consumer electronics prod-

Other compensation Tasker said that before imposing sanctions, the U.S. should use

the Toshiba incident as leverage to press for stronger enforce-

said Toshiba has made custom components for Apple's micro-computers since 1981. He praised the high quality of the praised the mgm quarry or use Toshiba components and noted that it would take at least two

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# "Graphically Vivid"

CommunicationsWeek, February 16, 1987

# "Pizazz"

"Graphics puts the pizazz into network analysis."

Computerworld, March 16, 1987

Frank Dzubeck, Communications Network Architects, Inc.

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